THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XIV. No. 340—17th YEAR.] LONDON, OCTOBER 31, 1865. [Subscription per Ann. 15s. in Advance, 18s. Credit.] [DOUBLE No. Price 1s.

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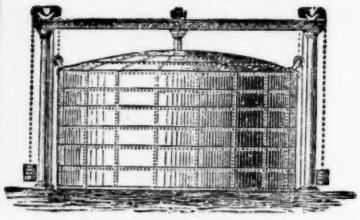

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1862,

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It is worthy of remark, that the only two other Firms who receive Awards *both manufacture imitations of Thomas Glover's* Patent Dry Gas-Meter, and the reason given for these Awards is "*construction* and sound workmanship." Thomas Glover, therefore, claims that the *construction* of his Meter has obtained *three Awards from the Jury of the International Exhibition of* 1862; at the same time, *contrasting* the Award granted for his Meter by the words, "*For excellence of manufacture, as regards Dry-Meters.*"

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CONTENTS.

	PAGE
Notes upon Passing Events:—	
The late Lord Palmerston	773
The Town Council of Sheffield, and the Report of the Children's Employment Commission	774
The Street Traffic of the City of London	774
Proposed Approaches to the Northern Thames Embankment	775
Leading Article:—	
Gas Lighting at the Cape	775
Circular to Gas Companies:—	
The Common Council of the City of London and the Gas Supply	776
The Leamington Local Board and the Gas Company	777
The Accounts of the Birmingham Gas Companies	777
Proposed Purification of Gas from Bisulphide of Carbon by Soda-Waste	777
Disinfecting Properties of Coal Tar	777
The Gas Supply of Canterbury	777
Dismissal of an Appeal of the Rickmansworth Gas Company by the Herts Sessions	777
Correspondence:—	
Mr. Quick's Report on Constant *versus* Intermittent Water Supply	777
Moscow Gas Company	778
Register of New Patents:—	
Gedge, W. E.—Pincers for Gas and other Pipes	778
Young, J.—Producing Gases and Vapour in a Heated State	778
Best and Holden—Apparatus for Charging and Drawing Gas-Retorts	778
Foster, W. R.—Packings of Pistons and Piston-Rods	778
Wilson, J. H.—Pumps	778
Sharp and Smith—Valve and Tap	779
Croll, A. A.—Purification of Coal Gas	779
Hind, J.—Pumps	779
Johnson, J. H.—Treatment of Oils obtained from the Distillation of Tar	779
Brandon, H. A.—Treatment of Tar Oils	779
Macrae, A. S.—Lanterns for Burning Hydrocarbon Fluids	779
Pierce, G. H.—Socket for Pipes	779
Clark, W.—Combustion-Pumps	779
Rosser, S. E.—Ventilation of Pressing-Irons Heated by Gas	779
Anderson, W.—Metal Pipes	779
M'Laren, A.—Apparatus for Heating Water	779
Applications for Letters Patent	780
Grants of Provisional Protection	780
Notices to Proceed	780
Patents which have become Void	780
Legal Intelligence:—	
Herts (St. Albans Liberty) Quarter Sessions—The Rickmansworth Gaslight and Coke Company, Appellants, *v.* the Watford Union Assessment Committee, Respondents	780
Miscellaneous News:—	
Meeting of the Continental Gas and Water Company	782
Meeting of the Gas-Meter Company	782
Meeting of the Great Central Gas Company	783
The Accounts of the Birmingham Gas Companies for the Year ending June 30, 1865	785
Metropolis Gas Supply—	
City of London Court of Sewers	786
Court of Common Council	786
Researches on the Volatile Hydrocarbons	789
Sale of Gas Act—	
City of London Quarter Sessions	790
Metropolitan Board of Works	790
Explosion of Gas at All Saints Church, Nottingham	790
Public Lighting in Dublin	791
Professor Frankland's Analysis of the Metropolitan Waters in October	791
Oleaginous Mineral	791
The Supply of Gas in Canterbury	792
Quality of the Glasgow Water	792
Dr. Whitmore's Report on the Quality of the Water supplied in St. Marylebone, in August and September, 1865	793
Dr. Whitmore's Report on the Quality of the Gas supplied in St. Marylebone, in August and September, 1865	793
Share List of Metropolitan Gas Companies	792
Price Current	792

TO CORRESPONDENTS.

The conclusion of Professor Anderson's paper is unavoidably postponed till our next issue.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

NOTICES.

The subscription is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders must be made payable at the Charing-Cross Money-Order Office, to William H. Bennett, No. 42, Parliament Street, Westminster.

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Stamped copies, when forwarded by post, must be folded so as to expose the stamp; they are otherwise liable to the full postage charge for letters.

All Communications to be addressed to the Editor, No. 42, Parliament Street, Westminster; and orders for Advertisements to the Publisher, Mr. W. B. King, No. 11, Bolt Court, Fleet Street.

THE JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, OCTOBER 31, 1865.

Notes upon Passing Events.

LORD PALMERSTON occupied so large a space in the domestic history of the country, that no journal, however devoted to class questions, can afford to pass the death of this illustrious and remarkable man without notice. We know him best in this JOURNAL as Home Minister and as a highly intelligent landed country gentleman. As a Home Minister he did not so much shine, but will be remembered by one or two axiomatic sayings—as when he described "dirt" as "only "something out of place;" and told the whisky-loving Scotch baillies that sobriety and soap would do more to avert cholera than barren prayers. It was the high merit of Lord Palmerston that he sympathized with every class, and was always prepared to be convinced. Fortunately for himself, and still more fortunately for his country, he was never the slave of theories. His policy at an important period for the sanitary legislation of the metropolis, as well as his character, are amusingly sketched in the following extracts from a now-forgotten pamphlet, written in 1856, by one who knew the great Minister's private tastes as well as public life:—

People who knew Lord Palmerston's character, who knew him to be a proud man, endowed with no ordinary amount of common sense, particularly shrewd in the management of his own affairs, preternaturally acute in detecting a quack or humbug, wondered at finding him patronizing such a person as Mr. F. O. Ward—a style of man whose advice he would not have taken on the question of draining his Broadlands estate, or managing his Tremadoc slate quarry, or his Hampshire racing stud. The probability is that Lord Palmerston, a thorough party leader, was prepared to surrender any minor question about the merits of which he was ignorant or indifferent, to gain a political point or to serve a friend. Now, the Earl of Shaftesbury, a good man, sincerely anxious to see the people clean and virtuous, but always led by the nose by some one—because he has vigour without original views—although bred a Tory of the old school, became connected with Whig families by his marriage with Lady Palmerston's daughter. It was no small matter to secure the political support of so thoroughly respectable a man as the philanthropic earl. Lord Shaftesbury was easily caught by Mr. Chadwick, and became one of the indefatigable supporters of the Quart-into-Pint School. We can fancy, before the issue of the commission including Mr. Ward's name, that something like the following dialogue may have taken place between the Home Minister and Lord Shaftesbury:—

Palmerston.—"Well, Shaftesbury, I have seen your friend — this Mr. Ward—had him for nearly an hour, and could scarcely get rid of him. Clever fellow, decidedly, but a fearful bore, and a good deal of a snob. Not quite so fatiguing as our old *cauchemar* Chadwick. Now, tell me what is it you want me to do for him."

Shaftesbury.—"My dear Palmerston, you do talk in such a singular style. I can assure you Mr. Ward is perfectly disinterested—(Lord P. laughs gently)—but we are anxious to put an end to the shameful system of engineering extravagance." [Here Lord S. launches into an harangue, during which Lord P. closes his eyes and meditates. From time to time the words "impermeable," "glazed," "tubular," "sanative precautions," "cholera," "hygienic studies," "waste of sewage manure," "centralized authority," rise above the level of the discourse. Lord S. finishes with "prejudice and ignorance of engineers."]

Lord P. starts from his musings, saying—"Capital—excellent—quite eloquent, my dear S.; but to business. About this sewage affair, I can't make out who's right or wrong, and I don't mean to try. As long as the London constituencies don't make up their minds, I shan't. I've other things to think of. However, as you want to provide for this Ward—(Lord Shaftesbury makes a sign of dissent)—no—well, you want to advertise him, then. Let the man write me such a plausible letter as will enable me to get rid of the present commissioners, and then I'll put him in. If he succeeds, of course, sooner or later, he will come in for something, although Chadwick has licked the sanitary platter rather clean—C.B. and £1000 a year, eh? But, mind, if he fails I've done with him—I can't march through Coventry with a sewerage hobby. You ask me—I consent; he shall have a fair chance. If Cubitt and Stephenson's party should prove too much for him—and they are heavy metal to go against, let me tell you—you must not expect any help from me. I am not a sanitary reformer, mind."

At this stage of the conference his lordship's own man comes in, and whispers something. "What!" breathes Lord P., in reply, "honest John passing through. . . . See him? of course I will. . . . Hope to goodness he's got another Illione filly for me. Shaftesbury, excuse me—a tenant from Hampshire—very important." So the earl retires to put in motion Mr. F. O. Ward's commissionership, and makes room for honest John Day—honest Iago!—a commissioner of another kind.

It was as a landed country gentleman—that character which all the civilized nations of Europe envy us—that Lord Palmerston, in a social and non-political sense, pre-eminently distinguished himself. Without ever becoming out of his own county the object of that absurd idolatry which farmers bestowed, during a period of madness, on the political "duffers" of Protection, titled and untitled, Lord Palmerston was one of the best, because one of the most intelligently liberal of landlords. The cheers that greeted the consistent

stupidity of a great duke, or the mountebank colonel of Lincoln, never have hailed him at agricultural dinners; but no English or Irish tenant ever applied for legitimate assistance without receiving it. His character as a friend of the agricultural interest did not depend on foolish, hopeless votes in the House of Commons, or buttering speeches at rural dinners, or reckless generosity in pounds and half-crowns, but in steadily devoting a per centage of his income to the permanent improvement of his landed property. He desired to see his tenants provided with all the best "plant" for carrying on the best style of cultivation, and was always prepared to do the landlord's part on equitable terms. He knew that in this climate, on all retentive soils, thorough drainage was the foundation of good farming. By precept and example, long before thorough drainage was accepted, he did his best to make its necessity known. When he had matured the principles of drainage he placed himself unreservedly in the hands of the most advanced master of the art—Mr. Bailey Denton—and in his own handwriting, on the day of one of the most important Cabinets of this century, gave in his own clear style a statement of what incalculable advantages might be derived from well-planned, well-executed systematic drainage. Whatever Lord Palmerston undertook was well carried out. His slate quarries near Tremadoc were fitted with the best appliances in tramways and trucks thirty years ago, before such machinery had been usually adopted in Wales.

How fortunate would Italy be, did that new kingdom possess a minister who, merely in an agricultural point of view, was as free from prejudice and as keen in pressing solid improvement as our late Premier. Italy is a country incalculably rich in latent undeveloped agricultural wealth. The conformation of the narrow peninsula with a lofty backbone of steep mountains running down its centre, creates on either side of the backbone a series of valleys and flat lands, sloping down to the sea, of the richest alluvial soil under a sub-tropical sun, and, if dry, capable of growing all the most profitable crops a teeming population of thriving cities can consume. But there is one great, although not insuperable obstacle to the cultivation of these valleys and lowlands. They receive all the drainage of the mountains, and thousands of acres are in the constant condition of marsh; thousands of acres are the subject of ruinous intermittent deluges, while no inconsiderable extent is covered by lakes of surface water. Every month there comes before the British public some scheme for reclaiming and draining and irrigating Italian land, supported by figures showing that if the work were done there would be no want of purchasers of the land and tenants at a remunerative price. But there are difficulties in the way which, until removed by legislation and administration, will effectually dam up the flow of capital so essential to the salvation of Italy; for Italy is sunk in debt, and one great way out of insolvency is to be found in rendering these tens of thousands of acres of waste able to pay rates and taxes. But the lion in the path of the desirable consummation which would bring English capital and practical science to turn damp deserts into real mines of wealth, is the official engineer—an accomplished gentleman with a small salary and a high position, elegant in a drawing-room, versed in classic literature, able to tell more about Archimedes and Hiero than nine out of ten presidents of the British Institution of Civil Engineers, with lots of pleasant, intelligent small-talk on music and the fine arts, well able to make pretty coloured drawings and plan out irrigation, if the water be at hand, but totally ignorant of the history of civil engineering as practised in England and Holland during the last all-important fifty years. He neither understands the principles of thorough drainage nor the processes by which vast tracts have been reclaimed by artificial pumping. There are Italian engineers, occupying high official positions, who have never seen or read, even in a book, of steam-pumping apparatus, the only means by which the dead levels on the borders of the tideless Mediterranean can be drained. Until some Cavour-like patriot arises to drive these ignorant persons from their vantage ground of office, and to utilize the modern science and practice of engineering, land worth millions sterling will remain harbours for wild beast and wild fowl, instead of yielding cotton, corn, oil and wine, hemp and flax, and other crops, for which the demand is ceaseless.

The Town Council of Sheffield have been moved to a healthy discussion by newspaper strictures on the report of the Children's Employment Commissioners. The mayor put the question on a sound common-sense footing by stating that he never allowed boys to be employed in his works under nine years of age, or in the steel-works at all under thirteen years of age; and that he insisted that all should be able to read and write before they began to work for wages. This statement cuts the ground from under the many supporters of tyranny over children as a matter of necessity, for what the mayor of Sheffield does of his own free will, other manufacturers and workmen must, if necessary, be compelled to do. It is evident that the reform must originate with the manufacturers who employ large numbers. They are more easily made responsible both to public opinion and to legal penalties. One of the common council was so rash as to plead that the young children's wages were required by the parents to support their families, but an anonymous voice interrupted him with the truth—"The Sheffield "workmen drink their children's wages!" From Mr. Isaac Ironsides came the sort of defence of cruelty and ignorance systematized that we often hear from the mouths of politicians of his class. Mr. Ironsides, if we mistake not, was a prominent member of that Foreign Affairs Committee which proposed to take a share in setting all foreign despotic governments to rights, and he was also a Chartist advocate for placing the government of this country in the hands of the class that sympathizes with trades union tyranny. But Mr. Ironsides could see nothing wrong in working boys of nine years old by day and night, and thought the floor of the steel-house a warm and comfortable bed for an overworked child. Without a fact to support him, he doubted the reports of the ignorance of the workmen's children, and candidly expressed his dislike to "inspectors "poking their noses into workshops, and interfering with "business." The Liberal politicians of Mr. Ironsides' school uphold the right of every man to larrup his own nigger, and claim freedom to grind the bones and brains of children into beer. But this sort of political economy will not stand daylight. The mere discussion of the children's employment question has done an infinity of good. Safe careful legislation will follow in due course. At Sheffield, too, the blind philanthropist and M.P., Professor Fawcett, has been learning a lesson on the real aims of trades unions, which must very much modify the sentimental view which this accomplished and amiable man had evolved from his "own inner consciousness." Mr. Fawcett's questions got out that the file-makers union was a despotism, maintained for the purpose of keeping the trade in its old channels, limiting the number of workmen, and morally, if not physically, persecuting the "filth" who objected to join the union. The rule against wearing moustaches to protect the mouth against stone and steel dust was tacitly admitted. The opposition to machinery was also admitted. The principle of the file-makers union is to keep up wages by limiting numbers, with a perfect indifference to the condition and employment of the general population. This very powerful body, which keeps the masters under its thumb, has never attempted any rules for limiting the labour of children, or enforcing the use of fans to drive away the murderous dust or to encourage education; but it has made the use of the paralyzing lead rest for the hand compulsory. Professor Fawcett courageously wasted his breath in trying to drive sound principles of political economy into the file-makers. Associations, high or low, are only convinced by the force of facts. But when Professor Fawcett told them that if file-making machinery were rejected in Sheffield it would certainly find a place in some other hardware town or village, he used an argument that could not be answered, and that perhaps would bear fruit in the minds of the more intelligent of his hearers. At no distant day, in Staffordshire or Warwickshire, by means of a limited company, file-making machinery will be introduced, and finally forced on Sheffield. Trades unions, to protect the rate of wages, are legitimate, and even useful; but it is the despotic attempts to limit employment and exclude the use of labour-saving machinery that demand attention at the present time, when the agitation for transferring the balance of political power from the middle classes to the trades unions is about to be resumed. The working classes ought to reform their trade legislation before they claim to settle the taxation and the foreign politics of the country.

The state of the traffic of the City of London is such that we really expect to find some day all the wheeled vehicles between Somerset House and the Bank, Bishopsgate Street, and London Bridge station at a dead lock for twelve hours at a stretch. So far, railroads have only added to the number of convey-

ances for goods and passengers; and as regards the former, the completion of the inner and outer circles will undoubtedly not diminish but increase it. The obvious remedy, *in theory*, is to widen the main thoroughfares, pull down St. Mary-le-Strand and Temple Bar, increase Fleet Street to its fullest width, sweep away the north side of St. Paul's Churchyard, after pushing Ludgate Hill to the full span of the railway bridge, and enlarging the Poultry and Mansion House Street to the full width of Cheapside. But where is the money to come from? Five millions would scarcely do it—perhaps not ten millions. The Thames Embankment Road and Mansion House Street may do something to relieve the Strand and Cheapside of direct traffic, and the Finsbury station of the inner circle may decrease the number of cabs and omnibuses plying to and from the west. But then these two new traffic resources will also bring more commerce, and consequently goods, into the City, and pour it out opposite the Bank; and what is to be done with it there if matters are to be conducted as they are at present? The Metropolitan Board seem wide awake and active in *their* district, pushing on the gigantic works entrusted to them, and not unwisely planning inevitable extensions, regardless of expense. We observe that on the *agenda* of the Board, adjourned from Friday last (in consequence of Lord Palmerston's funeral), was a "Report of the Thames Embankment Com-"mittee," worthy of the Prefecture of Imperial Paris—a proposal to expend half a million of money in making approaches to the Northern Thames Embankment roadway and railway. This splendid scheme includes, besides obvious communications with well-known *cul-de-sac* streets in the Strand, an opening from Charing Cross through Northumberland House at a cost of £190,000, and approaches from Wellington Street to both sides of the Waterloo Bridge roadway at a cost of over £250,000. A glance at a map will show the splendid utility of these two parts of the general design. Whether the Board be or be not able to find means to carry out this report in its entirety, the mere suggestion will raise their position in public opinion. If carried, the certain effect will be to add to the enormous traffic already daily concentrated between the Mansion House and the Bank. If the self-satisfied City authorities remain with folded hands waiting on Providence until Mansion House Street is opened, without making an effort to accommodate the existing and the coming tide of traffic, why then the odds are that the Legislature will hand over the powers of construction and administration, which the ancient and wealthy Corporation of London are unable or unwilling to claim or to exercise, to its younger rival. We observe that, in a report to the Commissioners of Sewers, dated the 24th inst., their engineer, Mr. Haywood, strongly urges widening the north side of Mansion House Street, which he considers "may be regarded as a substantive and independent improve-"ment of importance and utility, whether the Poultry be ever "widened or not." He based this recommendation on the fact that "the portion of ground needed for the improvement "which lies between St. Mildred's Court and the European "Tavern *is now uncovered.*" But since these lines were written, and before they were printed, the façade of the Union Bank has been raised on the uncovered ground, and the chance of a comparatively cheap improvement, which has been before the Corporation for years, has been allowed to pass by, probably for ever. Mr. Haywood's short report is worth reading. His arguments in favour of widening the whole thoroughfare of Mansion House Street and the Poultry on the north and not on the south side are irresistible; but it seems likely that the execution, even if at double the cost, will be left to the Metropolitan Board when it takes possession by conquest of all constructive powers in the City, and leaves to the Common Council its forms, its pageants, and its dinners! More the pity, for the public would rather walk in "ancient "ways," if they were only kept decently clean and open.

There is one thing the Corporation of London could do—if it had pluck and honesty—without money, and that is, regulate the heavy traffic. Make warehousemen and shopkeepers take in and give out their waggon and van loads during the quiet hours of early morning and late evening. As the streets cannot be made wider, the days of work must be stretched into night, and the heavy slow-wheeled traffic divided from the fast passenger traffic. But against this indispensable sacrifice private interests prevail. Shopkeepers and warehousemen are all-powerful in the Common Council. For this reason, when the dead locks of the City have attained parliamentary importance, there will be a plausible argument found for transferring the authority which shall regulate the traffic to an authority more independent of pressure from shops and warehouses than the parliaments of Guildhall.

GAS LIGHTING AT THE CAPE.

The commissioners for the municipality of Cape Town have called on those whom it may concern in England and at the Cape for tenders for lighting the streets of that city. The motive for making this call, when there is a gas company established in Cape Town, is not stated in the advertisement, but we gather from other sources that in that distant colony, as in the mother country, the lighting of the public lamps is a bone of contention between the municipal authorities and the gas company. The system of charging a lower price for gas supplied to the street-lamps than to private consumers—against which we have often strongly protested—has been adopted at the Cape to the serious detriment of the gas company, who have at length determined to bear it no longer, and they have given notice to terminate the existing contract. The municipal authorities who have for the last twenty years enjoyed the privilege of a supply of gas at less than cost price, do not see why they should now pay more; and in the vain hope of inducing some English speculators to supply them with gas on the same terms, they offer their support to any competing company. The price now charged for gas at Cape Town to private consumers is indeed so high as to present an alluring bait, and the promised support of the municipality may increase the temptation to snatch at the shadow; therefore it may be desirable to say a word or two of caution to those who may be inclined to throw away the substance in the attempt.

The existing gas company is a local one, established in 1846, but though the city contains 30,000 inhabitants, the annual consumption of gas does not exceed 10 million feet, of which quantity one-fourth is supplied to the public lamps. The average price of coals is 50s. per ton, which charge is not diminished, as in England, by the sale of coke and other residual products, for there is great difficulty in disposing of them. Many improvements have been recently made in the works, and the gas supplied is equal in illuminating power to 12 sperm candles. The price charged to private consumers is 15s. per 1000 feet, with discounts that reduce the price to large consumers to 12s. 6d. The annual average consumption of each of the public lamps is 10,000 feet, and the present contract requires the company to provide for the supply of 295 lamps, distributed over an extent of nineteen miles of main, for the sum of £6 per lamp per annum, including lighting, extinguishing, cleaning, and repairs. After deducting those charges, the actual price of the gas is about 7s. 6d. per 1000 feet, or one-half the price charged to private consumers. The company were induced in 1861, partly by promises of increased private consumption, to extend their mains into a district where nearly 400 feet of main were required to supply each lamp; but finding that there was no demand for private lighting, and that the length of mains was greater that stated in the plans, they have not completed the proposed extension. The supply of gas to the public lamps, which had previously been unremunerative, was then attended with loss, and the company thought it time to put an end to their contract, which they could do on giving twelve months notice. It is under these circumstances that the commissioners for the municipality of Cape Town call for tenders for lighting the streets, in the expectation that they may find some persons in England who will undertake to do so on the terms that the experience of the established company has proved to be less than cost price.

The system of charging less for gas supplied to local authorities than to private consumers is not only unjust to those who are compelled to burn gas in their shops and offices, but, by keeping up the price, it operates most prejudicially in preventing the extension of gas lighting in private dwellings. It produces that effect even in this country, where the price of gas is generally much less than that of any other kind of light, and it operates far more prejudicially in preventing the diffusion of gas lighting in those places where the materials for gas-making are much dearer, and the price of gas must be comparatively high. In all countries where other means of artificial illumination are nearly as cheap as gas, the only reliable source of remuneration to a gas company is the supply of the public lamps, and it is, under any circumstances, a hazardous enterprise when the promoters are tempted by the concession of a monopoly of

gas lighting to supply the public lights at unremunerative prices. The practical effect of such an improvident arrangement must be, as it has proved in Cape Town, to make it necessary to charge private consumers a price that discourages the consumption of gas. That the charge of 15s. per 1000 feet is not unreasonable when one-fourth part of the gas sold is supplied at an unremunerative price, is proved by the fact that the dividends of the company have not averaged more than 8 per cent. in a city where the common interest of money is 6 per cent. In other places, even where more favourably situated for receiving supplies of coal, the prices of gas are higher. At Hong Kong, with coal at 45s. per ton, gas is stated to be sold at 18s. per 1000 feet; at Rio the price is 20s.; at Calcutta, where coal costs only 21s. per ton, the price is 12s. per 1000 feet; at Sydney, with coal at 30s., the price of gas is 11s.; in Geelong it is 20s., and the town-lamps are charged £15 each; at Ballarat the price of gas is 30s., and at Castlemaine it is as high as 40s. per 1000 feet. A prospectus we have received of a new competing company at Melbourne affords conclusive evidence how costly gas-making is in the colonies. The engineer's report of the new company—which of course gives as favourable a representation as possible—estimates that with coal at 26s. per ton delivered at the works, the gas will cost 4s. 9d. per 1000 feet; and 5s. 2·59d. being allowed for profit, he shows that gas may be sold for 10s. per 1000 feet, the price charged by the existing companies being 14s. This estimate is founded on an assumed annual consumption of 100 millions of cubic feet per annum. At Cape Town, with coal at nearly double the price, and with an annual consumption of only 10 millions, from one-fourth of which no profit is derived, the price of 15s. per 1000 feet, with discounts, seems in comparison very moderate. We understand also that the municipality are generally in arrear in their payments to a sum equal to the whole floating capital of the company, and the loss thus sustained is calculated to be equivalent to £100 per annum. The public lighting of Cape Town has, therefore, been an incubus to the gas company that they must be rejoiced to throw off, and we cannot conceive that any speculators in this country will be so rash as to saddle themselves with the burden.

Circular to Gas Companies.

The rumour, noticed in our last, of the intention of the corporate authorities of the City of London to apply to Parliament for powers to manufacture and supply gas, will have prepared our readers for the result of the proceedings of the special meeting of the Court of Common Council, held on Thursday last, of which an ample report is given in another part of our present number. The spasmodic energy exhibited by such a rapidly decaying institution as the Corporation of the City of London, on a question that requires to be handled with great delicacy, does not augur favourably for the issue. The gas supply of the City has been again and again under consideration in the Court of the Commissioners of Sewers, and in the Court of Common Council, and it has been so bandied about from one court to another, from committee to committee, and reported on so often, that it is difficult to make out which is the body responsible for the course of action which seems to have been at last hastily adopted. The supply of gas has been a theme on which the City orators have held forth with more vehemence than discretion for many months; and had they thought more on the subject and spoken less, they would most probably have come to a different conclusion than that of recommending the Corporation to undertake the manufacture and distribution of gas to the citizens. The time approached, however, when it seemed necessary, for the sake of preserving appearances, that something should be done; and at the meeting on Thursday, after several outbursts of eloquence, a resolution was passed authorizing a special committee to give the necessary notices for applying to Parliament for an Act to empower the Corporation to manufacture and supply gas. The enviable present condition of the supply of gas in Manchester was, of course, advanced as an illustration of the great advantage resulting from corporation management; and it was urged that if 20-candle gas can be supplied in Manchester for 3s. 2d. per 1000 feet, with a large balance of profit to be applied to the improvement of the town, the same result might be attained by a similar system of management in London. It would, no doubt, be very desirable if it could be done, but there are certain difficulties in the way which the orators who held up that tantalizing picture to view either did not see, or purposely kept out of sight. It was not until after a long struggle and many sacrifices that the gas consumers and ratepayers of Manchester gained the advantages they now possess, notwithstanding the conditions on which the works were purchased were infinitely more favourable than the existing gas-works could be purchased by the Corporation of the City of London. The Manchester local authorities acquired the original works in 1824, for the small sum of £34,000; nevertheless the supply of gas did not prove remunerative for twenty years, and it was then proposed to dispose of what had proved an incumbrance to the commissioners, and a source of great discontent to the gas consumers. After the passing of the Manchester Gas Act, however, and when the management was transferred to the Corporation, an improvement took place in the undertaking. As there was no competition, the price charged for an inferior quality of gas was, for a series of years, 33 per cent. more than in Liverpool. By that means a large amount of profit was realized, out of which the Corporation have erected enormous gas-works; and the advantages derived by the consumers of gas at the present day have been gained by extortionate demands on their predecessors. Even under these favourable circumstances the management of the Corporation Gas-Works cannot compete with that of the Liverpool Gas Company. It appears from the accounts for the year ending in June last that the surplus of profits payable to the improvement department was £25,758, and not upwards of £50,000, as stated at the meeting of the Court of Common Council, and also in an article on the subject which appeared in the *Standard* of the same day; while the Liverpool Company, who now supply 20-candle gas at 3s. per 1000 feet, pay 10 per cent. on their capital of £638,000. If it be the object of those who wish to involve the Corporation of London in the hazardous experiment of making their own gas, to purchase the works of the existing companies, and monopolize the supply, they cannot expect Parliament to sanction such a scheme unless the market value of the shares be paid to the proprietors. At the present price of shares, the sum required to obtain possession of the works of the three companies that supply gas within the City would be about one million and a half, and that amount we conceive is more than the citizens will be inclined to venture on a hazardous experiment, that would most probably end in failure. If, on the other hand, it be the intention to ask Parliament to grant power to the Corporation of London to construct new works, and to supply gas in competition with the existing companies, it would be asking for that which it is contrary to all precedent for Parliament to grant, and which, if obtained, might lead to the same disastrous consequences as have attended the competition of the Corporation of Limerick with the United General Gas Company, the results of which we recently noticed. But, after all, supposing the Corporation to succeed, what will the gas consumers have gained? A regulated monopoly will be replaced by an unregulated one of the most oppressive character. For years the gas consumers of Manchester groaned under the monopoly of the Gas Committee, and Flintoff achieved no greater success than when he compelled them, by his agitation, to reduce the price of gas from 5s. to 4s. per 1000 feet, the price in Liverpool being at the time 3s. 9d.

On the same day that the Court of Common Council resolved to apply to Parliament for power to make and supply gas in the City, a deputation appointed by the parishes lighted by the Surrey Consumers Company waited on the directors to remonstrate with them on the price of gas charged in their district, and to propose a reduction. It is certainly an anomalous condition in the supply of gas that thickly-populated districts, like Bermondsey and Rotherhithe, should be charged 4s. 6d. per 1000 feet, while the adjoining suburban districts of Camberwell and Dulwich are supplied with gas of at least equal quality for 3s. 4d.; and it required all the ingenuity of the chairman of the company to defend such an anomaly. The reasons he assigned—that the price charged by one company is no guidance for another, as every tub should stand upon its own bottom; the losses incurred during a former system of management; and that the directors are bound by the Metropolis Gas Act to secure to the shareholders 10 per cent. and back dividends to the same amount—did not seem convincing to the members of the deputation, who were dissatisfied with the somewhat vague promise that if they called again at the end of two years their wishes might be complied with. It is stated in the *South London Journal*, indeed, that, so far

from being pacified, "the promoters of the anti-gas-monopoly "movement in the district intend at once to establish an "organization, with a view, if they be properly supported, to "go to Parliament."

No advance has been made towards an arrangement between the Local Board of Leamington and the gas company of that town. The company have, in firm but courteous terms, declined to agree to the proposition to sell their lamp-columns on the condition that they should waive their right to fix a meter to every lamp and adopt the double tap. At the meeting of the Board at which the letter from the chairman of the company was read, one of the members observed that he could not see what objection the Board could have to the company attaching a meter to every lamp at their own expense, if they so pleased; and it is equally incomprehensible to us, if it be really their desire to have the question settled in the most satisfactory manner, and at the least cost to the ratepayers. With respect to the double tap, the decided condemnation of any such instrument by Mr. Hughes himself, in his pamphlet on public lighting, from which we gave extracts in our last, produced a strong sensation when read at the meeting of the Board; but nothing was done further than to refer the letter from the chairman of the gas company to the Gas Committee, to report thereon at the next meeting.

We reproduce from the local papers the accounts of the Birmingham gas companies for the year ending the 30th of June last. Those of the Birmingham and Staffordshire Company exhibit a surplus of £343, after payment of the prescribed dividends, and carrying £885, to the reserve-fund. The accounts of the Birmingham Company are less satisfactory. The profits of the year did not allow the directors to pay the prescribed dividends without drawing on the reserve-fund and the balance of the previous year to the extent of £3343.

We understand that some very satisfactory experiments have recently been made at one of the metropolitan gas-works on the absorption of the sulphur compounds contained in purified gas by soda-waste. That substance is a sulphide and oxysulphide of calcium, and laboratory experiments made with it have, we believe, reduced the amount of sulphur contained in 100 cubic feet of gas to 5 grains. Soda-waste is a refuse produce of the manufacture of carbonate of soda, and it is at present not only without value, but it accumulates in mountain masses that are a positive nuisance to the manufacturers. It is to be hoped that the experiments which are about to be carried out on a working scale will be as successful as those of the laboratory.

A letter from Mr. F. J. Evans, the engineer of the Chartered Gas Company's works, in Westminster, has been published in the *Times* and other papers, on the curative properties of coal tar in cholera and other diseases, and recommending its application as a cure of the cattle plague. It is a well-known fact, he observes, that the dead oil obtained from the distillation of coal tar possesses extraordinary antiseptic properties, putrefaction being immediately arrested by its vapour; and he adduces several instances of the beneficial effects of the vapour of coal tar during the outbreak of the cholera in 1849. The workmen and others employed in gas-works during that period were remarkably free from its attacks, and Mr. Evans states that after the disease had subsided, he obtained reports from all the gas-works in London, and from several in the country, which affirmed that none of the workmen employed in them had been attacked. He further mentions the curious fact that large quantities of coal tar are exported to the East, and there burnt during outbreaks of fever, cholera, &c., with good results. From these facts he infers that if the cattle plague be due to some peculiar condition of the air, similar to that supposed to exist during the prevalence of cholera, the hydrocarbon vapour given off from coal tar would have an effect in arresting the disease. He suggests that shallow vessels containing the oil should be placed where cattle are kept, and that the wood-work of the buildings and railway trucks should be smeared over with it. He further suggests that a small quantity of the oil should be administered medicinally to infected cattle. We may mention, as a practical illustration of the correctness of Mr. Evans's view of this subject, that in one of the largest London dairies the noses of the cows have been daily smeared with coal tar, and that to the present time not one of them has been attacked with the cattle plague.

A deplorable account of the state of the lighting of the venerable city of Canterbury is given in a paragraph we copy from the *South-Eastern Gazette* of the 24th inst., which confirms all we said on a former occasion respecting the blunder the directors of the gas company have committed in transferring the management of the works to contractors, and thus depriving themselves of any control. Directors who cannot themselves discharge the duties of the office they are appointed to fulfil should make way for those who will do so, for nothing can more certainly bring to ruin even the most prosperous gas undertaking than handing it over to lessees or contractors, as a cloak to conceal the incompetency of the directors. This is more especially the case with a company that purposes to apply to Parliament for statutory powers, and to subject itself to the provisions of the Gas-Works Clauses Act.

An appeal by the Rickmansworth Gas Company to the Hertfordshire Sessions has been dismissed, on the technical ground that the churchwardens and overseers were not made respondents as well as the Assessment Committee of the Union, upon whom notice of appeal was alone served. The point is a novel one, but there can be no doubt the decision of the bench was right, and that the proper course, in all cases where the Union Assessment Act is in operation, is to make the churchwardens and overseers respondents, and the Union Assessment Committee co-respondents.

Correspondence.

MR. QUICK'S REPORT ON CONSTANT *VERSUS* INTERMITTENT WATER SUPPLY.

SIR,—Since writing my previous letter on this, subject, which was mostly a refutation of Mr. Quick's assertions, I have been thinking it would be best to raise and discuss the following questions, viz:—

1. Why is the constant supply better, both in a sanitary, social, and commercial sense, as well for the user as the finder, than the intermittent supply?
2. How is this superiority secured and maintained?

In the present letter, I purpose starting the discussion only, with a few observations resulting from a little experience and inquiry; and I hope some gentlemen with greater and more varied knowledge will also take up the question, which is sufficiently important to cause all to participate.

In reference to the first question, I contend that the constant supply is superior in a sanitary sense, because "*It ensures, at all times of the day and night, an unlimited quantity of water of the best quality, temperature, and pressure the sources of supply will allow;*" whilst the *intermittent supply*, under the same normal conditions, *necessitates the storeage of the water*, which the parsimony of the owner, occupier, or agent may, and often does, cause to be too small, and an inadequate supply is the consequence.

Again, if the storeage is ample in theory for the *use* of the establishment, it often happens that defective ball-cocks sometimes prevent the water flowing, or leakages through the closet or other fittings so rapidly consume or waste the water, that the consumer is without a sufficient supply for use.

Generally in intermittent supplies the onus of having proper sized cisterns and repairing them is left to the consumer as owner, occupier, or agent; and the pernicious working of this will best be shown by the following extract from the *Builder* of Oct. 7, which is not an uncommon occurrence, and exhibits a lamentable failure of the intermittent system:—

> At the present time, when the overcrowding of a large number of tenemented houses has been increased, and is still increasing, attention to the water supply is of very great importance. In Maypole Alley they never had any water on Sunday. How is it possible that they could have had, when the casks are so small and the population of the houses so large? Here there are little casks provided for the water, and there is no water laid on, so that the closets cannot be flushed; and is it likely that the people will "waste" the precious article, of which they have so little? If the drainage were right, a short leaden pipe would carry the water which is needed for the closet, and well flush the drains; but, as we have said a hundred times, when bad drains and cesspools exist, this flushing does more harm than good. By the Act of Parliament those who let houses are bound to provide water-vessels of a sufficient size, to have those vessels covered, to have dust-bins provided, and have them also covered over. How many instances throughout the metropolis—how many hundreds, how many thousands of cases of neglect in this respect are to be met with? And yet the law as at present established is sufficient for the purpose of enforcing those regulations which are so especially needed.

Having touched upon the sanitary features as regards quantity, I will now refer to the question of quality.

By the constant supply the water is secured in as good a state as the works will permit; but by the intermittent system the temperature is raised to a tepid, or lowered to a frigid point, according to the local effects of fire, sun, frost, &c., on the storeage receptacles. This variation of temperature is in itself very objectionable, and is combined with the deleterious effects of the

deposits in the cisterns which are very considerable, and formed from the daily washings from the water-mains, dust, blacks, and often vegetable matter and animalcula, the growth of which is largely aided by the temperature and exposure.

With these objections there cannot be much ground to stand upon in advocacy of the intermittent system; and the action of the lead or other cisterns on the water is another point, as well as the possible immersion of rats, cats, or other animals and substances.

Next comes the difference in a social sense, which I have separated from the sanitary consideration, although it is, so to speak, intertwined with it.

In cases of fire, the intermittent supply, as generally carried out, necessitates the movement of the steam or other engine with the complement of men, including the turncock, who has to be aroused from his slumbers. Then the plugs are drawn, or if the fire be away from the trunk mains, the valves commanding the side mains have to be opened. These are grave objections; and so superior is the constant supply, as usually worked, that *trunk and side mains are furnished with fire-cocks*, and *at any time water can be thrown to any height required by simply attaching the hose, and without waiting for the turncock or engine.*

The constant supply also enables any person to affix fire-cocks or apparatus on any part of his premises, and instruct his servants, who at all times can commence to operate, thus in all probability quenching many fires at the commencement, which the intermittent system would allow to extend until water is not of any avail.

Again, by the intermittent system, the altitude of cisterns, and consequently fittings, is often limited, and the consequence is that water is not easily attainable on the higher parts of houses for fires or other purposes; so that servants and poor people more particularly are put to a regularly recurring unnecessary trouble in carrying water, which would be obviated by a supply given at constant high pressure.

Having touched upon the sanitary and social questions, I will briefly refer to the commercial aspect.

1. *As to outlay and expenses in fittings, pipes, and distribution.*—By the intermittent system the consumer is burdened with the cost of a cistern, which necessitates pipes to and then from it to the supply-fittings; and as most of the benefit of the initial pressure is nullified by the intervention of the cistern, much larger supply pipes and fittings are required than would be the case in a constant supply. In an average-sized house the cost would be five times more in an intermittent than in a constant supply, to say nothing of the bother and expense in an intermittent supply when a customer discovers his cistern is too small to store his requirements.

The company or suppliers are also in the same position, as, having to distribute the whole day's water in a few hours by the intermittent system, much larger mains are required than would be necessary in the constant supply.

The company have also by the intermittent system to keep an expensive staff of turncocks and inspectors to turn the water on and off in the different districts. These turncocks and inspectors are in many well-managed constant supply works unknown, or at least converted into foremen and plumbers, and instead of being a cost to the company, they are a considerable source of profit, both directly, in the fitting account, and indirectly, through the saving of waste by repairs executed gratuitously.

2. *As to quantity of water consumed.*—This is greatest in the intermittent system, as the consumer often runs away the residue of his previous day's and now stale supply, to make room for the fresher water of to-day; or,

If he has a ball-cock apt to stop the water flowing, said ball-cock is fixed to prevent a recurrence of his misbehaviour, and the water allowed to run to waste full cock, either over waste-pipe or butt or through the fittings; or,

If the fittings are leaky and storeage large, a much greater quantity is consumed or wasted than is required for use.

The constant supply is more economical, as the water being always on, and as cool and fresh as possible, the consumer appreciates these blessings, and the fittings are opened and closed for each requirement, only as much water being used as is wanted, the slight waste in a well-managed constant supply works being almost absolutely due to the loss accruing between the time the defects in fittings are noticed and can be attended to.

I have the strongest reasons for the foregoing opinions and observations, and whilst I have in my present communication touched generally upon the various phases of the two systems, I have not by any means exhausted the subject, and shall in a future letter, with your permission, be glad to further canvass the *pros* and *cons*, and include *some particulars of "How the economy in constant supply works is secured and maintained."*

HENRY TOMLISON.

Water-Works Office, Cambridge,
Oct. 10, 1865.

MOSCOW GAS COMPANY.

SIR,—I have just received my warrant for dividend, at the rate of 7 per cent. per annum, upon shares which I hold in the Moscow Gas Company. No doubt, even in these days of 40 per cent. dividends, I ought to be satisfied with such a return for the money I have invested—indeed, I am; but my gratification is not enhanced when I look at the share list, and find that my capital has diminished in value to the extent of 25 per cent. To my unsophisticated mind, these two facts are not very easily to be reconciled. Can any of your numerous readers enlighten me upon this subject, or inform me what is being done to give light to the subjects of the Czar, whilst those of Victoria are totally in the dark? I enclose my card as evidence of my good faith in making the inquiry.

A SHAREHOLDER.

Register of New Patents.

86.—WILLIAM EDWARD GEDGE, of the firm of John Gedge and Son, of 11, Wellington Street, Strand, in the co. of Middlesex, for "*Improved pincers for gas and other pipes.*" A communication. Patent dated Jan. 11, 1865.

The pincers which are the subject of this invention have for their object to obviate the numerous inconveniences presented by the ordinary pincers, by screw pincers, and hand-vices, especially when workmen have to perform a difficult job. These pincers may be worked by hand only, which is an incontestable advantage when working in places of difficult or perilous access. They are composed of a stem or rod serving for a handle, on which is jointed a gripping piece of peculiar shape for holding the pipe. This piece is of less thickness on the exterior than on the interior, and carries on its inner face notched or toothed segments of a circle, or arcs of radii corresponding with the radii of the various running sizes of pipe. The notches on the arcs serve to facilitate the grasping and holding of the pipes. The upper part of the handle is round, and is also notched or toothed. The gripping piece and handle move freely on a pin which serves for a rotation axis. The inner groove of the grip, as well as the position of the notched or toothed segments, are so calculated as to perfectly embrace and nip pipes of corresponding diameter, on simply bringing the handle into such a position that its axis passes nearly through the centre of the pipe.

127.—JAMES YOUNG, of Limefield, in the co. of Mid Lothian, N.B., gentleman, for "*Improvements in producing gases and vapour in a heated state.*" Patent dated Jan. 14, 1865.

This invention relates essentially to an improved method of apparatus for obtaining certain gases and vapours in a heated state. One method, for example, consists in using a hollow cylinder placed upright, and containing coke, charcoal, coal, or other such material, which is set fire to near the bottom, air being forced into or drawn through it by the draught of a chimney. When the contents of the cylinder have attained a high temperature the current of air is stopped, and steam is blown in at the top and forced down through the heated material, by which hot carbonic oxide and hydrogen with more or less steam will be caused to issue from the bottom. The apparatus may be placed horizontally instead of vertically, and instead of a cylindrical vessel one of any other shape may be employed. In addition to passing steam through the apparatus, carburetted hydrogen or other gas or vapour may be used.

142.—SEALY JAMES BEST, of 193, Bermondsey Street, Surrey, and JAMES JOHN HOLDEN, of 6, Single Street, Bow, in the co. of Middlesex, engineers, for "*Improvements in apparatus for charging and drawing gas-retorts, and for other purposes.*" Patent dated Jan. 17, 1865.

The object of this invention is the construction of machinery for the saving of hand-labour in charging and discharging retorts, coke-ovens, &c., and the mounting of the whole of the covers of a set of retorts in one oven or furnace in a frame, or in connecting the same together, and suspending the whole by means of chains or rods from a bearing-bar, and balancing the same, so that the whole can be raised or lowered simultaneously. The machinery or apparatus proposed to be employed for the purpose of performing the above-mentioned operations, comprise a locomotive retort, charging and drawing machines, rising and falling balanced retort-covers, scoop feeders, &c., the description of which occupies six sheets of parchment, illustrated by eight sheets of drawings.

155.—WILLIAM ROBERT FOSTER, of Cowper Street, City Road, in the co. of Middlesex, india-rubber manufacturer, for "*Improvements in the packings of pistons and piston-rods of pumps and steam and other engines, which improvements are also applicable to hydraulic presses.*" Patent dated Jan. 18, 1865.

This invention has for its object to reduce the friction caused by the packing in the stuffing-box, and at the same time to provide against the escape or passage of fluid. For this purpose a hollow or tubular packing is used, in one or more rings or coils, open at one end and closed at the other, so that the steam, gas, air, or fluids shall enter the packing, by the elasticity of which, and by the pressure of the cover or gland, a piston-rod, or any description of packed rod, is made perfectly tight.

186.—JOHN HAYS WILSON, of the firm of John Hays Wilson and Co.' of Liverpool, brass-founders and ship ironmongers, for "*Improvements applicable to pumps.*" Patent dated Jan. 21, 1865.

The improvements consist in casting the chamber on the side of the pump-barrel in one piece therewith, and dividing such chamber by a vertical diaphragm; also in the application of an oblique grating or perforated plate to that part of the chamber down which the water descends, for the purpose of trapping any foreign matter that may be drawn through the suction-pipe.

223.—Stephen Sharp, of Melton Place, Euston Square, and Daniel Smith, of 28, Brill Row, Somers Town, for "*An elastic valve and high-pressure and general tap.*" Provisional protection only obtained. Dated Jan 26, 1865.

This tap is made of metal, with the exception of the seat or cushion of the valve or plug, or plunger, which valve is made of metal, resting on, and passing through, an elastic seat or cushion. The seat or cushion is made of vulcanized india-rubber, or of cork, india-rubber, and canvas combined. The tap is made in two parts, which screw one into the other, between which two parts the elastic seat or cushion is placed, so that by turning one part it screws up and compresses the elastic seat, which is forced forward so as to meet the valve, thus renewing the joint at any time when it may become in any way deficient. The valve, plug, or plunger is worked by means of a screw-crank or eccentric in connexion with the handle, as may best suit the size or purpose to which each tap is to be applied.

226.—Alexander Angus Croll, of Coleman Street, City, civil engineer, for "*Improvements in the purification of coal gas.*" Patent dated Jan. 26, 1865.

These improvements relate to the use of sulphuric acid, wood sawdust, or other suitable open or porous substance, and sulphate of lime, in the purification of coal gas.

In carrying out these improvements, it is preferred that the sulphuric acid employed be in a highly concentrated, and also in a highly heated state—say of a specific gravity of about 1·700, and at a temperature of about 270° Fahr.; and it is combined with the wood sawdust in the proportion of, say, about equal parts by weight of the acid and of the dry wood sawdust. With the combination obtained, sulphate of lime is employed in the proportion, say, of one part by weight of the sulphate of lime, and two parts by weight of the previous combination. These conditions, however, may be varied.

In the purification of gas, the sawdust or other suitable open porous matter employed, and the acid, should be placed in one purifying vessel, or one part of the purifying vessel, and the sulphate of lime, combined with sawdust or other porous matter, in another vessel, or in another part of the purifying vessel, so that the gas may be acted upon by the sulphate of lime and sawdust. It is preferred that the sawdust, or other porous matter thus separately combined with sulphate of lime, be acidulated and saturated with ammonia, by its previous use in the purification of gas.

The quantity of sulphate of lime should be in proportion to the quantity of carbonic acid gas present in the gas to be purified, and it is found that when the gas is purified from ammonia before it is purified from sulphuretted hydrogen, it requires about the proportion above stated, but when the sulphate of lime and porous material are used after such purification, it will be found that the proportion of active acidulated sawdust may be considerably lessened, and in some cases that such sulphate of lime and porous matter will have the effect of removing the whole of the remaining ammonia without the use of other material.

The claim is for the purification of gas by the use of sulphuric acid, wood sawdust, or other suitable open porous substance, and sulphate of lime, substantially as described.

237.—James Hind, of Liverpool, engineer, for "*Improvements in the construction of pumps for lifting and forcing liquids.*" Patent dated Jan. 27, 1865.

Pumps constructed according to this invention are worked by reciprocating motion. A lift-pump is constructed by forming the body or upper part of the pump with an annular space surrounding the passage or way through which the liquid is lifted. Attached to the reciprocating or pump rod or rods, and fitted to work in the said annular space, is a hollow cylinder, the outer end of which is fitted with a valve. On or in a passage or way pipe, surrounded by the said hollow cylinder, there is another valve, also fitted to open upwards. The suction-pipe should be connected into the passage or way, so as to make the pump suitable for the work to be performed.

A force-pump is constructed by connecting the suction-pipe or way into the annular space referred to in the lift-pump, and by providing two valves opening and working in the ordinary manner, and an air-chamber. The hollow cylinder acts as a ram or plunger, and the quantity of water which the pump would force to a height or distance, would be as the sectional area of the metal or other material of the hollow cylinder multiplied by the length of the stroke.

The invention also consists of the combination of lifting and forcing arrangements, above described, in one pump-body, which is the modification of the invention that is preferred.

244.—John Henry Johnson, of 47, Lincoln's Inn Fields, London, gentleman, for "*Improvements in the treatment of oils obtained from the distillation of tar, and in the application of the same to the purposes for which ordinary drying oils are applicable.*" A communication. Patent dated Jan. 27, 1865.

This invention relates to a mode of treating oils obtained from the distillation of tar, such as heavy mineral oils, with a view to the rendering of the same siccative and applicable when so prepared as substitutes for the more costly linseed and other drying oils at present employed in the manufacture of waterproof fabrics, and for painting, varnishing, and other purposes where drying oils are required. In carrying out the invention it is proposed to render tar oil siccative, not by direct treatment, but by mixing it in suitable proportions with drying oil that has been previously rendered siccative in excess. This admixture is accomplished whilst at an elevated temperature, although it may be done while in a cold state, and in varying proportions, according to the purpose for which it is to be applied.

245.—Alexander Horace Brandon, engineer, of 13, Rue Gaillon, Paris, for "*Improvements in the treatment of tar oils for the purpose of employing the same as paint.*" A communication. Provisional protection only obtained. Dated Jan. 27, 1865.

This improvement relates to the manufacture of paint fit for house work, carriages, cloths, and other objects, according to two different processes, in both of which tar oil constitutes the principal ingredient. The first process consists of the manufacture of paint formed of tar or mineral oil, vegetable oil, and drying ingredients, in the following proportion:—Tar oil from 55 to 80 per cent.; vegetable oil, such as linseed oil, poppy oil, nut oil, and other similar products, 20 to 45 per cent.; drying ingredients, such as sub-carbonate of iron, oxide of lead, sulphate of lead, sulphate of zinc, manganese, and other similar chemical ingredients, equal to about one-tenth in weight of the vegetable oil, which two latter ingredients are boiled together till they are of a proper consistency; the tar oil is added subsequently, and the whole agitated to ensure proper mixture, and allowed to cool, the requisite colouring materials being added. It can be applied in the same manner as the usual paints.

The second process consists of manufacturing paint with tar oil, vegetable oil, and Norway tar, in the following proportions by weight:—Tar oil about 16, vegetable oil about 10, and Norway tar about 4. For this purpose the vegetable oil is boiled down to the requisite consistency, after which the two other ingredients are added to it, either before or after cooling, and the whole agitated, the desired colouring matter being added, it is then fit for use.

256.—Alexander Septimus Macrae, of Liverpool, oil dealer, for "*Improvements in lanterns for burning hydrocarbon fluids.*" Provisional protection only obtained. Dated Jan. 28, 1865.

This invention consists in an improved arrangement of lantern for enabling petroleum, paraffin, and other hydrocarbon fluids, to be burned efficiently without the use of a glass chimney. At the lower part of the lantern there are perforated plates for the admission of air, and at the top a mock chimney or draughting medium, which chimney is part of the lantern, and is made of various heights and diameters, according to the size of the burner, and by its use there is sufficient draught to burn the fluid without emitting smoke, and without the glass chimney.

285.—George Henry Pierce, of Meavy, in the co. of Devon, for "*An improved socket for pipes, and method of joining the same.*" Provisional protection only obtained. Dated Feb. 1, 1865.

This improvement consists in forming one end of pipes with a tapered socket to receive a spigot on the end of the next following pipe, which spigot is also tapered to fit into the tapered socket. The spigot is formed with a flange round its base or largest circumference, to prevent the lead or other material used for packing from being forced out by the pressure in the pipes. The base or smallest circumference of the socket is provided with a corresponding flange or shoulder, in order that for heavy work, or where the joint is likely to get injured by the shaking of the machinery, or otherwise, a cramp-iron may be placed on each side to clip or hold the flange on the spigot, and the flange or shoulder on the socket; the cramp-irons may be secured by a ring driven tightly over them.

314.—William Clark, of 53, Chancery Lane, London, for "*An improved combustion-pump.*" A communication. Patent dated Feb. 4, 1865.

This invention is an improvement on that class of pumps or water-elevators in which by the combustion of hydrocarbon liquid a vacuum is produced, whereby water or other liquid is caused to rise through the suction-pipe, and to discharge at the desired point. The invention consists in the use of steam, combined with the hydrocarbon liquid, in the interior of the reservoir or chamber in which the vacuum is to be produced, in such a manner that by the condensation of the steam the intensity of the vacuum is considerably increased, and the raising or elevating of the water is materially facilitated.

350.—Samuel Egan Rosser, of Dorset Street, Salisbury Square, London, engineer, for "*Improvements in the ventilation of pressing-irons heated by gas, and for preventing the condensation of the vapour in the tubes of flues leading therefrom.*" Provisional protection only obtained. Dated Feb. 7, 1865.

These improvements consist—

1. In an arrangement for drawing off the products of combustion (from the place or chamber in which the gas is burnt) by or through a pipe or passage, or series of pipes or passages, into which pipes or passages the products of combustion are discharged, and from which the air is partially exhausted by an air-pump, pneumatic screw, bellows, rotary fan, or other convenient or suitable means.

2. In a method of preventing the condensation of the aqueous vapour contained in the products of combustion passing off by the before-mentioned pipes or passages by admitting thereto a suitable proportion of atmospheric air, whereby such aqueous vapour is retained in suspension and caused to pass away with the other products.

3. In an arrangement whereby the air admitted as described may be heated (and its capacity for moisture thereby increased), which arrangement consists in causing the air to pass through a series of passages surrounding the pipe or passage leading from the combustion-chamber, the quantity of air admitted being capable of regulation by means of a cylinder surrounding the passages, and adjustable so as to close a greater or less number of holes, whereby the air is admitted as required.

356.—William Anderson, of Dublin, engineer, for "*An improved mode of making metal pipes.*" Provisional protection only obtained. Dated Feb. 8, 1865.

It is proposed by this invention, in order to simplify the operation of applying flanges to wrought-iron pipes, to prepare a sand or other mould in which to cast a flange, and set the wrought-iron pipe upon its end in the mould. Molten metal is then poured into the mould, which metal, as it cools, will shrink upon the pipe, and hold firmly thereto. The better to ensure this union, it is proposed to tin or otherwise coat the end of the pipe at the part at which it is to come into contact with the molten metal, so as to avoid presenting an oxidized metal surface to the molten metal.

390.—Andrew M'Laren, of Upper Thames Street, London, iron-founder, for "*Improvements in apparatus for heating water, and in connecting hot-water and other metal pipes.*" Provisional protection only obtained. Dated Feb. 11, 1865.

This apparatus for heating water, for warming churches, conservatories, and other buildings, refers to what are known as "saddle-boilers," and consists in forming an additional water-space across the middle, and between the two sides of the boiler. This water-space extends from back to front of the boiler, or nearly so, and encloses between its upper surface

and the upper water-space a longitudinal passage or flue. The flames and the products of combustion first pass beneath the additional water-space to the back of the boiler, then return through the passage or flue above such water-space, and finally back again over the top of the boiler to the chimney.

The method of connecting hot-water and other metal pipes consists in forming a socket about half an inch in depth, more or less, in the end of one pipe, to receive the end of the next adjoining pipe, and in fitting an india-rubber washer or other packing between the ends of the pipes, to make the closing hermetic. A flange is formed near the end of each pipe for the passage of bolts for fixing the pipes to each other. The flanges also act as stops to the packing.

APPLICATIONS FOR LETTERS PATENT.

2646.—Richard Archibald Brooman, of 166, Fleet Street, London, for "*An improved liquid compound for purifying sea and other waters.*" A communication. Oct. 13, 1865.

2660.—Albert Julius Mott, of Liverpool, Lancaster, wine merchant, for "*Certain improvements in the production and uses of carbonic acid gas.*" Oct. 16, 1865.

2674.—Carl Gustave Lenk, of Dresden, Saxony, now residing at 6, Lawrence Lane, Cheapside, London, machinist, for "*An improved process for purifying and preserving water.*" Oct. 17, 1865.

2706.—Charles Denton Abel, of 20, Southampton Buildings, Chancery Lane, London, for "*Improvements in rotary pumps.*" A communication. Oct. 20, 1865.

2710.—Richard Fell, of 7, Robinson Row, London, engineer, and Davy Hammond, of Hackney Road, London, for "*Certain improvements in regulating the supply of water to cisterns and tanks to be attached to service-pipes, and avoiding all risk of waste; likewise for the use of water-closets, and drawing off liquids.*" Oct. 20, 1865.

2719.—Isham Baggs, of 54, Chancery Lane, London, electrical engineer, for "*Improvements in the manufacture of inflammable gases and in their application to useful purposes.*" Oct. 21, 1865.

2745.—Hyde Bateman, of Barnes, Surrey, surveyor, and Edward Gooch Garrard, of Vauxhall, Surrey, wine merchant, for "*Improvements in the construction of pumps for raising or forcing water or other liquids or fluids.*" Oct. 24, 1865.

GRANTS OF PROVISIONAL PROTECTION.

2372.—William Esson, of Ness House, Cheltenham, Gloucestershire, for "*Improvements in the construction of gas-meters.*" Sept. 16, 1865.

2615.—John Joseph Parkes, of London Street, Paddington, London, gas engineer, for "*Improvements in the manufacture of railway-station and other gas-lamps.*" Oct. 10, 1865.

2620.—James Crutchet, of Stroud, in the co. of Gloucestershire, at present at Washington, U.S.A., for "*Improvements in the manufacture of gas.*" Oct. 11, 1865.

2632.—Jean Ursin Bastier, of Gower Street, London, civil engineer, for "*Improvements in apparatus for raising liquids.*" Oct. 12, 1865.

2660.—Albert Julius Mott, of Liverpool, wine merchant, for "*Certain improvements in the production and uses of carbonic acid gas.*" Oct. 16, 1865.

2674.—Carl Gustave Lenk, of Dresden, Saxony, now residing at 6, Lawrence Lane, London, machinist, for "*An improved process for purifying and preserving water.*" Oct. 17, 1865.

NOTICES TO PROCEED.

1703.—Charles Worssam, of Commercial Wharf, Kingsland Road, and George Evans, gentleman, of Gloucester Place, London, for "*An improved pulping and compressing machine for the treatment of peat as a fuel and gas for illuminating purposes.*" June 26, 1865.

1809.—Isham Baggs, of 54, Chancery Lane, London, electrical engineer, for "*Improvements in the production of artificial light, and in the apparatus connected therewith.*" July 8, 1865.

2305.—James Webster, of Birmingham, Warwickshire, engineer, for "*Improvements in hydropults and hydrostatic pumps.*" Sept. 8, 1865.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

2741.—James John Shedlock, "*Improvements in gas-meters.*" Oct. 11, 1862.

2770.—Richard Archibald Brooman, "*Improvements in apparatus for carburetting gas.*" A communication. Oct. 14, 1862.

2805.—Jonah Davies "*Improvements in rotary engines, rotary pumps, and rotary blowing machines.*" Oct. 17, 1862.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £100 BEFORE THE EXPIRATION OF THE SEVENTH YEAR.

2087.—Alfred Hope Johnson Bastable, "*Improvements in apparatus employed in the production of light.*" Sept. 14, 1858.

2137.—Alfred Fauvin Jaloureau, "*Improvements in the manufacture of pipes.*" Sept. 23, 1858.

2223.—William Malam, "*Improvements in apparatus for the manufacture of gas*" Oct. 6, 1858.

Legal Intelligence.

HERTS (ST. ALBANS LIBERTY) QUARTER SESSIONS.

THURSDAY, OCT. 19.

(*Before the Earl of* Verulam, *Chairman, and a Bench of Magistrates.*)

THE RICKMANSWORTH GASLIGHT AND COKE COMPANY, APPELLANTS, *v.* THE WATFORD UNION ASSESSMENT COMMITTEE, RESPONDENTS.

Mr. W. H. Clark appeared for the appellants, and Mr. Codd for the respondents.

This was an appeal by the Rickmansworth Gas Company against the assessment of their property to the relief of the poor, under the Union Assessment Act, 1862. In the valuation list of the overseers, made on the 7th July last, the gas-works were assessed at a gross annual rental of £200, and a net rateable value of £150. The company, which had been formerly rated at £65, being dissatisfied with this assessment, gave the requisite notice of objection, and the Assessment Committee, upon the hearing of such objection, reduced the net rateable value to £125. Against this reduced assessment the company now appealed.

Mr. Clark said he believed that he and his learned friend who appeared for the respondents were agreed that this case came before the court for the purpose of determining *bonâ fide* whether the property of the appellants had or had not been overrated. This appeal was to some extent a novelty, there having been as yet but few appeals under the Union Assessment Act, and therefore the *modus operandi* was somewhat difficult to understand. The proceedings, he need hardly say, were taken under the Act 25 and 26 Vic., c. 103, 1862, entitled "An Act to amend the law relating to Parochial Assessments in England;" and the Act 27 and 28 Vic., c. 39, 1864, entitled "An Act to amend the Union Assessment Committee Act, 1862." By these Acts the onus of fixing the rateable value of the property in the several parishes in the union was shifted from the parish officers, and thrown upon a committee appointed for the purpose by the Board of Guardians. But inasmuch as Union Assessment Committees, like all other bodies, were not infallible, the Statute provided that where they had come to a decision as to an assessment which was not satisfactory to the parties interested, there should be an appeal to the Court of Quarter Sessions. He regarded this as a very fortunate circumstance, inasmuch as an Assessment Committee could not command the time, and had not the opportunity of going into the question so fully as this court could do, having all the parties before them. He believed, as already remarked, that in the present instance the difference between his learned friend and himself would turn upon a question of fact, as to whether the assessment of the property of the gas company was or was not too high, and he believed that in the end he should be able to satisfy the court that it was considerably too high. The short facts of the case, which at this preliminary stage it would alone be necessary to go into, were these:—The Rickmansworth Gas Company, which was a very small concern, was formed in 1852. The capital of the company was £2000, divided into 400 shares of £5 each, and they started with only one gasholder, having a capacity of 7000 cubic feet. Shortly after the establishment of the company the capital was found to be insufficient, and the slight addition of £300 was made to it. Matters stood in that way until 1864, when it appeared that the supply of gas during the winter months was insufficient. It was evidently not for the interest of the public any more than for the gas company that that state of things should continue, and it became a serious question with the directors what steps should be taken to remedy the deficiency. They ascertained that for all their present purposes, and probably for some time to come, a small addition to their gasholder capacity would be sufficient; but they very wisely looked before them, and considering that most likely by the increase of buildings in the town and the increase of railway facilities, the demand for gas would, in the course of years, be much enlarged, they determined, as the most economical course in the end, to erect a larger gasholder than at present was at all necessary. They accordingly erected one having a capacity of 14,000 cubic feet, to pay for which they were obliged to raise a further sum of money to the extent of £700, so that their capital now stood at £3000. But, as he had already remarked, the company had no immediate use for so large a gasholder, and it was, to a certain extent, an incumbrance to them, as they had never worked it up to its full powers. The question for the court in determining the rateable value would be, not what that gasholder might be made to yield in five or ten years to come, but what its present value was to the company, *i.e.*, what business it was actually earning for the company at the time the rate was made. And there was another circumstance to which he would allude, because it might hereafter be urged by his learned friend, and he was desirous that it should not be supposed that he was withholding from the court any information with regard to the position of the company. To a stranger passing by the works it might appear that the company were most favourably situated with regard to the facilities for carrying on their trade. The works were located on a cut of the canal, and it might be argued that the company were in an excellent position with reference to water accommodation. In point of fact this was an appearance merely, and not a reality, for the cut upon which the works fronted was private property, which the company had no right to, and did not make any use of, so that they had no accommodation as to water carriage, which enhanced the value of their property. He might also inform the court that a large portion of their business was carried on at a considerable loss, on account of some of their mains having to be carried over an extensive district, where the demand for gas was very limited. Having thus glanced at the position of the company, he would state briefly the circumstances in connexion with the rating now appealed against. Of course, when these works were established the company became liable to be rated in respect of the real property held by them, according to the test laid down in the Parochial Assessment Act. In 1864, Mr. John Davis Paine was appointed by the Poor Law Board as valuer of the property in the parish of Rickmansworth. It was to be assumed that this gentleman was a person of experience in such matters, and that he would act independently as between the parish and the gas company in assessing their property. Mr. Paine made his valuation, and assessed the works of the company at a gross estimated rental of £60, which, after making the usual deductions provided for in the Parochial Assessment Act, made the net rateable value £45. It was right that he (Mr. Clark) should call attention to this fact, although he did not mean to contend that this was the amount at which the company should now be assessed, their capital having been increased subsequently to that valuation by the sum of £700, and their storeage capacity by the erection of the new gasholder.

Mr. Codd said he was desirous of saving the time of the court, which he thought would be unnecessarily occupied if his learned friend proceeded to open the case more elaborately. He would, therefore, at once call upon him to prove the service of the requisite notices.

Mr. Clark said he had quite understood that no technical objections were to be raised.

Mr. CODD said he had never consented to anything of the kind, and it would save time if he now took those objections.

Mr. CLARK said, in that case, he would put in the notice to the Union Assessment Committee. He had already stated that this was an appeal under the Act 27 and 28 Vic., c. 39, entitled "The Union Assessment Committee Amendment Act, 1864," by the first section of which it was provided that "before any appeal shall be heard by any special or quarter sessions against a poor-rate made for any parish contained in any union to which the Union Assessment Committee Act, 1862, applies, the appellant shall give 21 days notice in writing previous to the special or quarter sessions to which such appeal is to be made of the intention to appeal, and the grounds thereof, to the Assessment Committee of such union; provided that, after the 1st day of August next, no person shall be empowered to appeal against a poor-rate made in conformity with the valuation list approved of by such committee, unless he shall have given to such committee notice of objection against the said list, and shall have failed to obtain such relief in the matter as he deems just." The gas company were dissatisfied with the assessment of their property as it appeared in the valuation list prepared by the overseers, and they gave notice thereof to the Assessment Committee, from whom they failed to obtain such relief in the matter as they deemed just. Their remedy, therefore, now was by coming to the quarter sessions, having given the requisite 21 days notice, in which they stated the grounds of their objection. He apprehended that under such circumstances the appeal was properly constituted.

The CLERK OF THE PEACE read the notice, which was dated Sept. 27.

Mr. CODD: I presume that is the only notice which has been served.

Mr. CLARK: Precisely so.

Mr. CODD: There ought to have been a notice served upon the churchwardens and overseers.

Mr. CLARK said he apprehended that such a notice was not necessary. The churchwardens and overseers had been already brought before the Union Assessment Committee, and it was not against their valuation, but against the decision of the committee that this appeal was made. The valuation of the company's property by the overseers was in the sum of £200 as the gross estimated rental and £150 as the net rateable value. When the question came before the Assessment Committee upon the objection raised by the company, they reduced the assessment to £125; but the company were not satisfied with that reduction, and they now appealed against the reduced amount. What they complained of was the decision of the Assessment Committee under the terms of the Act.

The CHAIRMAN: You object to the rating, and not the rate?

Mr. CLARK said it was, in point of fact, an objection to the rating, which was what the Act contemplated. There was no other condition imposed by the Act before they were enabled to come to the quarter sessions than that they should give 21 days notice to the committee; but his learned friend, however, sought to import another condition—viz., a notice to the parish officers. Notice was given to them in the first instance, and had been, in point of fact, worked out. They were taken before the Assessment Committee, where they stood in the position of defendants. Beyond that point the Act substituted the committee for the overseers, they being the persons to make the rate.

Mr. CODD: Do not say that, because the Assessment Committee never make a rate.

The CHAIRMAN: The rating they make.

Mr. CLARK said the rate, no doubt, was made by the parish officers, and the parties objecting brought the matter before the Assessment Committee, under the terms of the Statute, and their decision determined the rating. The question was whether the appellants were satisfied with that determination; if not, they clearly had a right to come before the sessions.

Mr. CODD said he would call the attention of the court to the second section of the Amendment Act, which provided that the Assessment Committee might, with the consent of the guardians of the Union, be co-respondents in the appeal to the sessions. Co-respondents with whom? he would ask.

Mr. CLARK said he did not quite understand his learned friend's objection, and would still contend that the appellants were within the terms of the first section of the Act in appealing against the decision of the committee. It was that decision which affected his clients, for the parish officers were bound to alter the assessment in accordance with that decision, which was, in reality, the grievance. The Assessment Committee were present for the guardians. He was surprised that any technical objection should now be raised, because he thought it was perfectly understood beforehand that this was a fair and *bonâ fide* proceeding on both sides.

Mr. CODD said it was perfectly so on his side, but what he submitted was that if the appellants were bound by Act of Parliament to give notice to some persons, and they had not given that notice, it was not for him to waive any objection of that sort; because, if the case were gone on with, the court could not bind parties who were not before them. The churchwardens and overseers were not present, and if the court should quash the rate they would bind them.

Mr. CLARK: For whom does my friend appear?

Mr. CODD: I appear for the Assessment Committee alone.

Mr. CLARK: If my friend's clients have no right to be here, he has no *locus standi* to take an objection.

Mr. CODD: You brought us here by your notice.

Mr. CLARK: We gave the Assessment Committee notice, and my friend says he represents them alone, and yet, apparently in the interest of some persons who are not here, he takes this objection. The Assessment Committee represent the guardians, and it does not lie in my friend's mouth to raise this point. I submit that there is only one condition precedent to an appeal in the terms of this Act, and that is a notice to the committee, which has been duly given.

The CHAIRMAN: It appears to the court that the appellants have fulfilled the conditions of the Act of Parliament, by giving notice to the Assessment Committee 21 days before the sessions.

Mr. CODD said all that was required *quoad* this Act the appellants no doubt had done, but he would call the attention of the court to the Act 17 Geo. II., which was the original Act requiring notice. That Act was continued by the 41 Geo. III., and by the 12 and 13 Vic. By this Act notice of appeal was required to be given to the churchwardens and overseers. But in this case that had not been done, therefore the parties were not before the court, and if the bench should do that which his learned friend asked them to do—viz., quash the rate, without allowing the parish officers, who were primarily responsible for making the rate, to be heard, an act of injustice would be done. If the court would look to the second section of the Act of 1864, they would see that the Assessment Committee might be made co-respondents. With whom? Clearly with the churchwardens and overseers; and a co-respondent was a respondent with another, but in this case they were made sole respondents.

The CHAIRMAN: You say that there is nothing in this Act which repeals the old law as to giving notice.

Mr. CODD said there was nothing in the Union Assessment Act which affected it.

Mr. CLARK said it occurred to him whether the appellants did not give sufficient notice when they in the first instance brought the parish officers before the Assessment Committee.

Mr. CODD contended that that was not sufficient, and that they should have been formally served with notice of appeal to the sessions.

Mr. CLARK said the question was this:—The rate was made, and under the old law the appeal would have been direct to the quarter sessions, and the notice would have been given to the parish officers. But by the Act of 1862 the Assessment Committee was interposed. The appellants gave the overseers notice of appeal, which appeal was directed to be brought, in the first instance, not before the quarter sessions, but before the Assessment Committee. He was not sure that this was not a fair and valid answer to the objection of his learned friend, because the notice originally given raised the issue between the parties from which period the appeal was constituted, although intermediately the question had to come before the Assessment Committee. The point really was, whether the appellants were bound to do more than this Act required. The overseers had notice on the 29th of August that the company would object to the valuation of their property before the Assessment Committee, and having failed to obtain from that body such relief in the matter as they deemed just, he submitted that the churchwardens and overseers were already parties to the suit, and that the appellants were not bound to do more than give 21 days notice to the committee of their intention to go to the quarter sessions, which notice was the one condition precedent mentioned in the Act. Under the old law the first notice to the parish officers would have been sufficient to constitute the appeal, and the company had, in addition, following the express terms of the new law, given the further notice to the committee.

The CHAIRMAN said it appeared to him, after looking at the Act 27 and 28 Vic., c. 39—the Union Assessment Committee Amendment Act—that the notice to the Assessment Committee was something superadded, and that before an appeal could be constituted at quarter sessions the provisions of the old Act must be carried out in the usual way. Otherwise the overseers, although they knew that the appeal had been made to the Assessment Committee, could not possibly be aware that it was to be carried further.

Mr. CLARK said if that was the opinion of the court, he should submit, as a matter of fact, that the overseers had had notice, although he admitted that, as a matter of form, it should have been given on an earlier day. The overseers were served with notice on the 16th inst., and no doubt, strictly speaking, that could not be considered "reasonable notice," which was generally taken to be 14 days before the sessions. Still, as he had been given to understand that the object of the parties was to obtain the opinion of the court as to the real merits of the difference between them, he should think an objection would not be taken on this point.

Mr. CODD said he took no objection to it. He only brought these matters before the court that they might be in a position to say whether they were prepared to adjudicate in the absence of interested parties.

Mr. CLARK said the appellants did not ask the court to adjudicate behind the back of any party. Unquestionably if this was intended to be a formal notice, under the old law, it ought to have been served on an earlier day. It was only when it was suggested that this objection might be raised that the appellants gave notice to the parish officers. They had felt all along that in coming to the sessions they were appealing against the decision of the Rating Committee, not against the rate made by the parish officers, and, therefore, that the notice pointed out by the Act of 1864 was sufficient. If, however, the court was of opinion that the appeal was not sufficiently constituted, and that they were consequently not in a position to go into the matter, he would submit that the appellants having brought the appeal to try a *bonâ fide* question were entitled to ask for an adjournment under the 112th sec. of the Act 17 George II., which enacted that—"If it shall appear to the justices that reasonable notice has not been given, they shall adjourn such appeal to the next session." No one was present on this occasion to represent the parish officers, who would not be in any way damnified by such a course as he proposed, and the appellants felt that they had a substantial case upon the merits which they were desirous to have the decision of the court upon. In support of his request, he reminded the court that if the appellants had given no notice at all it would have been competent for them to come now, and, upon a motion, to enter a respite of the appeal to the following sessions.

Mr. CODD said there was one answer to that which was conclusive, and would show the fallacy of his friend's argument—it was this: *cui bono* an adjournment to next sessions? An adjournment for what? Of the proceedings as they now stood? The court had no power to add parties nor to bind parties who were not already before them. Such being the case, the appeal would be in *statu quo* next session. He would suggest to his friend that it would be better to consent to the appeal being at once dismissed with costs, and to raise the question upon the next rate, giving the proper notices. This appeal was incurably defective—radically wrong from the beginning.

The CHAIRMAN, referring to Archbold's "Practice," said it was held that the quarter sessions had no power to respite an appeal, except in cases where all the preliminaries were properly attended to. In the present instance the requisite notice had not been given, and the Court, therefore, could not comply with the application. The appeal must now be dismissed.

Mr. CLARK said he must admit that in asking for a respite there was this practical difficulty, that the overseers would be bound by a proceeding of which they had no notice.

Mr. CODD applied for the costs of the Assessment Committee, who had, as he submitted, been brought before the court unnecessarily. In all such cases costs were given against the appellants, not by way of punishing them, but as an act of justice to the respondents.

Mr. CLARK said he could not take any exception to that proposition, so far as necessary expenses were concerned, but he was in a position to show by evidence that several days previously the point upon which the appeal had been dismissed was mooted between the solicitors on each side, and the question was then asked whether any objection was to be raised on the subject of notices. The respondents solicitor was informed that if it was the appeal would not be proceeded with. He (Mr. Clark) submitted to the court that all the expenses incurred since then by the respondents ought not to be allowed.

The CHAIRMAN said, in going over the depositions on the previous day, he was told that no technical objections would be made to the appeal.

Mr. CODD, with submission to the court, did not consider that this was a technical objection, but a very substantial one. He did not, in fact, raise it as an objection, but only as a point for the information of the court, so

that if they went wrong it should be with the knowledge of the fact that the inquiry must end in smoke.

The CHAIRMAN said he did not think it would end in smoke. The question for the court was whether the rating was too high.

Mr. CODD said the case could not have been proceeded with. He had no power to waive the objection, and the court could not bind third parties who were not before them.

Mr. CLARK urged that if faith had been kept with the appellants all the expenses of coming before the court would have been saved, as they would not have prosecuted the appeal with the knowledge that such an objection was to be raised.

Mr. FEW (respondents solicitor) said that, in conversation with the solicitor on the other side, he had stated that he did not intend to take objection to anything, but that he apprehended this was a matter upon which the court should be informed. He merely represented the Board of Guardians, and had no power to waive any objection of the kind.

Mr. FELLOWES (appellants solicitor) denied that in his interview with Mr. Few anything was said about the court being informed that the notice had not been served. He had ascertained that, according to the practice of the court, if no objection was taken, the case would go on; and so surprised was he at the course now adopted on the other side, after the clear understanding which he supposed existed between their solicitor and himself, that he should not charge his clients one shilling of the expense of coming there.

The CHAIRMAN said there was evidently a misunderstanding on the point. The court decided to dismiss the appeal, without costs.

Miscellaneous News.

CONTINENTAL GAS AND WATER COMPANY, LIMITED.

The Second Ordinary Meeting of Shareholders was held at the Registered Offices of the Company, 60, Gracechurch Street, in the City of London, on Friday, Oct. 27—GEORGE SCAMELL, Esq., in the chair.

Mr. CHALON (the secretary) having read the advertisement convening the meeting, the following report was presented:—

The directors have the pleasure of reporting that the works at Port Louis are in a forward state, and they fully expect the lighting will commence before Christmas; from reports received from competent parties on the spot, the works executed by the contractors up to the present time are of a satisfactory character.

The gas-fitters sent out are in full employment, and considerable orders are being received by each mail for gas-fittings specially ordered by intending consumers.

The manager reports that a very large consumption may be anticipated in the shops and private houses, both by the European and native population, who are looking anxiously forward to the lighting up, as, by his calculation, the cost of gas at 12s., when compared with the present means of lighting, will be about one-third.

The Arras works are gradually extending, the number of consumers now being about 450, and from the reports received, the quality and supply of the water are giving great satisfaction to the consumers. The works are in good order, and your directors have perfect confidence that, under the present manager, they will be as speedily developed as possible.

The directors propose to pay a dividend at the rate of 6 per cent. per annum, out of the profits arising from the Arras property, and to carry the balance forward to the credit of profit and loss account.

The large and important works at Port Louis being so near completion, the payments required on account of them are necessarily heavy. The directors have, therefore, after due consideration, determined upon submitting a plan for issuing debentures, which they trust will meet the approval and obtain the assistance of the shareholders for obtaining the capital required, in addition to the issued share capital, leaving a sufficient margin, after providing for the said debentures, for the payment of 10 per cent. interest at the least to the shareholders, when the works become in full operation.

The accounts having been read,

The CHAIRMAN said, although the report had so fully informed the proprietors of the position and prospects of the company, there were two or three remarks which it might be well he should make. With reference to the water-works at Arras, he was happy to be able to say they were progressing very favourably. The measures taken by the engineer of the company, as stated at the last meeting, to secure the springs had been perfectly successful. The water was remarkably good, the works were very popular with the inhabitants of the town, and the number of consumers was daily increasing. The directors, therefore, in looking forward to the future, were gratified with the prospect of an ample return for the money expended upon this undertaking. They had legal possession of everything there, and the estate was entirely vested in the company. With reference to Port Louis, the progress of the works there also was satisfactory. The accounts which had appeared in the public press, and the documents which had reached the board from private sources, were most encouraging. The works were most substantially erected with massive granite walls, and the directors had every reason to be satisfied with the way in which the contractors had performed their duty. The company's agent stated that the daily demands and inquiries about the gas were very numerous; already a number of houses had been fitted up for its reception, and as the supply to the Government establishments was included in the concession, it was evident that the future consumption of gas would be large. And there was good reason why it should be so, for their own agent stated that the cost of lighting his house, which now amounted to about 10s. per week, would, when the supply of gas was available, be reduced to 2s. or 3s. Taking the large population of the town, therefore, to whom this advantage and economy would be offered, it was clear the company might look for a very satisfactory return. As to the time when the works would be in operation, he might state that the board were in hopes it had even now begun, and that if not now it would certainly be the case before Christmas. In every respect the prospects of the company were equal to the anticipations indulged in at its establishment; the directors were in no way discouraged or disappointed, and they had no anxiety whatever as to the future working of the concern. With regard to financial arrangements, however, there had been some little difficulty. The payments which became necessary were heavy and continuous, and the directors had been compelled to obtain advances on their own responsibility. To provide for these expenses the board had determined, as they had power by the Articles of Association to do, to issue debentures to the extent of £60,000, which would in the first instance be offered to the shareholders upon a plan which would be fully laid before them shortly, and in that way they believed that they should be able successfully to carry on the operations of the company, and secure its permanent success. He moved that the report and accounts be approved and entered on the minutes.

Mr. RHODES seconded the motion.

The CHAIRMAN, in reply to inquiries, said the population of Port Louis was about 80,000, and was increasing. The population of Arras was 35,000. The profits derived from the works in the latter place were sufficient to pay a dividend of 6 per cent. upon the whole of the capital called up to the present time. The number of customers there had increased considerably since the last meeting. There were gas-works in the town, but they were not in the hands of this company. If the company had confined their operations to Arras the issue of debentures would not have been necessary, but the construction of the large and important works at Port Louis had involved a very heavy expenditure. The coals required for the manufacture of gas there were shipped from England, and on arrival had to be carried about a mile, but ultimately the company would have jetty of their own, by which the coals could be taken at once into the works.

The motion for the adoption of the report was then put, and carried unanimously.

On the motion of the CHAIRMAN, it was also resolved—"That a dividend at the rate of 6 per cent. per annum for the half year ending the 30th of June, 1865, free of income-tax, be now declared, payable forthwith."

Dr. BEATTIE and the CHAIRMAN gave some explanations relative to the proposed issue of debentures, and it was stated that the detailed plan would be placed before the shareholders in a few days.

On the motion of Mr. RHODES, a vote of thanks was given to the chairman and directors for their attention to the interests of the company.

The CHAIRMAN said the board were much gratified with the confidence reposed in them; they had done all in their power to promote the success of the undertaking, and would cheerfully continue to do so.

GAS-METER COMPANY, LIMITED.

The Annual General Meeting of this Company was held at the Offices, 10, Coleman Street, on Wednesday, Oct. 25—ALEXANDER ANGUS CROLL, Esq., in the chair.

Mr. RAIT (the secretary) read the notice of meeting, also the following report of the board of directors:—

Your directors have called you together in accordance with the Articles of Association, which state that the annual general meeting shall be held on the last Wednesday in October in each year.

They have the pleasure to lay before you the accounts made up for the past year, ending the 30th June last, together with the balance-sheet, the whole examined and duly audited by Messrs. Quilter, Ball, and Co., as well as by the shareholders auditor.

These accounts show, after payment of the interim dividend and bonus, at the rate of 12 per cent. per annum, in April last, a balance of net profit amounting to £4353. 9s. 10d., which your directors propose to deal with in the following manner—viz., £2466. 18. 4d. in the payment of a dividend and bonus for the half year ending the 30th June last, together at and after the rate of 12 per cent. per annum; £628. 5s. 5d. to write off the entire amount at the debit of preliminary expenses account; £750 to be placed to a fund to be called the contingent-fund; and the balance of £508. 6s. 1d. to be carried to the next year's profit and loss account.

Your directors have much pleasure in announcing a steady progress in the business of the company. Without including the business done at Oldham during the half year ending the 30th June last, the business done during the past year exceeds that of the previous by 30 per cent. These results your directors attribute to the principle laid down to supply none but the best quality of article. The introduction of machinery on a large scale in the manufacture of dry gas-meters has more than answered the expectations entertained—it has enabled your company to improve the quality, and has secured greater accuracy in all the parts of dry gas-meters; the natural result has followed—viz., an increase in demand arising from those engineers who have inquired into the merits of the process, and have given it their approval. The unvarying water-line gas-meter attracts increasing notice from gas engineers. There are now over 22,000 in use. Many companies use them almost exclusively, and the Gas Committee of Manchester, having had the subject of meters under their particular consideration for many years past (see extract at foot), have adopted this meter exclusively for the purpose of hiring out to their consumers.

The Oldham establishment has fully answered the hopes entertained. It has, in the matter of cast-iron work, considerably eased the factory in the Kingsland Road, and exhibits a large increase in its business, compared with the corresponding period last year.

Two directors retire by rotation—viz., Orlando Brothers, Esq., and Stephenson Clarke, Esq. Both are eligible for re-election, and the directors recommend their re-election.

Extract from Letter of the Chairman of the Gas Committee, Manchester, addressed to the Editor of the "Manchester Guardian."

"The Gas Committee, for years past, have given constant attention to the question of obtaining a meter which could be relied on for accuracy of measurement; and at the present, acting upon the results of their investigations, they are purchasing only, for hiring out to consumers, a wet compensating meter, by which the variation in the measurement is limited under all possible changes of pressure to a much narrower limit than that which is sanctioned by the Sales of Gas Act."

The CHAIRMAN said the circumstances connected with the general meetings of this company had hitherto been so pleasant that he could truly say for himself and his colleagues they looked forward and anticipated their recurrence with feelings of the liveliest satisfaction. He believed that when all the circumstances connected with the present meeting were taken into consideration, it would be found not less interesting than its predecessors, and that the prospects of future success which the report just read opened up for the company were no less encouraging than those which had heretofore been laid before the shareholders. It would be observed that on this occasion the directors had adopted the course which from the first they had felt desirable—viz., of submitting the accounts to the scrutiny of Messrs. Quilter and Ball, the eminent accountants, in addition to the investigation which they underwent from the auditors of the company. Remembering the facts connected with various companies which had been lately established for the purchase of manufacturing businesses, he thought the shareholders would feel that the board had acted wisely in this matter. It was certainly very desirable, however well-intentioned the persons transferring such businesses to a company might be, that the absolute truthfulness of their representations should be placed beyond the possibility of doubt or question. With reference to this company's operations, he might remark that the increase in the trade had been so great that, but for the purchase of the premises belonging to the business at Oldham, the works at Kingsland, large as they were, would have been altogether inadequate to meet the demand made upon them. A considerable portion of business had been draughted off to Dublin—still the whole of the premises at Kingsland had been fully occupied; and the directors, in addition, had been obliged to rent several arches of the railway, for the purpose of manufacturing the larger class of consumers and station meters. The increase in the returns for the year ending June 30, 1865, amounted to 33 per cent. over that of the year ending at the corresponding period in 1864. Since the time the accounts now laid on the table were made up—*i.e.*, from June 30 to Oct. 24—the increase at the Dublin and Kingsland establishments over the corresponding period of last year was £3189. 16s., while at Oldham the increase was £3375. Taking the whole of the establishments together, the amount of business done between June 30 and Oct. 24, 1865, was £25,225, as against £18,661 for the corresponding period of 1864, being an increase of no less than £6564. These results were attributable to a very large extent, first of all, to the great ability and industry displayed on the part of the managing director, and the other principal officers of the company—Mr. Andrews, Mr.

Archer, Mr. Mackay, Mr. Paulin, &c. No doubt also it was attributable to the correctness of the instruments manufactured by the company, and to the fact that the shareholders were distributed over all parts of the country. There were many shareholders in Scotland and Ireland, several on the continent of Europe, and some even in America. All of them were connected with the supply of gas to the public, and therefore specially interested in the providing of the best instrument for measuring and recording its consumption. And he might remark, on the authority of Mr. Rait, and the other principal officers, they had observed that of all the customers they had to deal with those who were shareholders in the company were by far the most particular as to the entire accuracy of the meters supplied to them. At first sight, the reason for this might not be very plain; but when it was considered that these gentlemen joined the company because they were desirous of promoting the sale of the best instrument which could be obtained, it would be seen to be a natural result that they took care to secure that for which to a large extent they were responsible. Having mentioned the growing requirements of the company as to manufacturing space, he might state that Mr. Rait had drawn up a number of figures showing how much they at present possessed. At Kingsland it appeared they had an area of 13,163 square feet, which gave a floorage of 30,272 feet, the whole of which was fully occupied. The railway arches which they rented there gave them a further area of 11,721 square feet, 7032 of which were already occupied. At the Dublin establishment they had an area of 23,242 square feet, of which 5205 were occupied, giving a floorage of 10,870 square feet; and at Oldham an area of 20,016 square feet, of which 9828 feet were already occupied, giving a floorage of 24,570 square feet. It would thus be seen, that as regarded the London establishment, every available inch of ground was in profitable use except a small space in the railway arches. At Dublin they had room for a considerable increase, and he might remind the shareholders that the premises there were held on most favourable terms. The company had a lease of them for an unexpired term of 150 years, at a rental of £66. They let off a small portion, for which they received £55 a year, so that they stood at a rent of only £11. At Oldham, as he had stated, they only occupied for manufacturing purposes, 9828 out of 20,016 square feet which they possessed; but then he should tell them that their property in that town consisted in addition of some very neat substantial dwelling-houses, which were let at a rental of £140. This property the company held on a lease for 999 years, and having visited this place as well as Dublin, he could assure the meeting that he never was better pleased in his life both with the establishments themselves and the admirable way in which the business in each was carried on. The Dublin establishment was under the charge and management of Mr. Andrews, of whom he would say that a more intelligent, active, and zealous man he did not know; the Oldham business was under the care of Mr. Archer, and he could say, with great truthfulness, the same with regard to him. In fact, he did not know of any company which was better served or in a better position than the Gas-Meter Company. With these remarks he had great pleasure in moving—"That the report and accounts now read be received and adopted."

Mr. NICHOLSON seconded the resolution, which he believed would meet with the unanimous acceptance of the proprietors. They might certainly congratulate themselves in reference to the present position of the company, and also upon the fact (which was one of no small importance in the face of the revelations now being made in the newspapers respecting commercial undertakings transferred from private firms to joint-stock companies) that the business handed over to them by Messrs. Croll and Rait had turned out exactly as represented. It was quite clear there had not been the slightest misrepresentation or concealment on the part of those gentlemen, for all the promises held out to the shareholders had been more than realized. The great success of the company was no doubt partly due to the zeal and ability of the managing director and of the other officers of the company, and partly to the circumstance that most, if not all, the shareholders were in some way or other connected with gas companies, and had, therefore, a direct interest in the use of a well-constructed and accurately registering gas-meter. His own conviction was that "the unvarying water-line meter" would ultimately prevail over all others. It was very gratifying to find that the company were in a position to pay a 12 per cent. dividend, that the whole of the preliminary expenses had been written off, and that they had commenced the formation of a reserve-fund.

The CHAIRMAN, in reply to the honourable proprietor, stated, with regard to the issue of the new shares at 20 per cent. premium, that a larger number had been applied for than had been allotted. The directors had resolved to confine the allotment of shares to applicants who were either directly or indirectly connected with gas companies.

The motion was put, and carried unanimously.

The CHAIRMAN then moved—"That the directors be empowered to hold the future annual general meetings of the company on any day in October that they might select as most convenient." He explained that the object of this alteration in the rules was proposed with a view to suit his own engagements, the last Wednesday in the month, which was the day at present fixed for the meetings, being one upon which he had an important appointment.

The motion having been seconded, was agreed to unanimously.

Mr. NICHOLSON moved, and Mr. STEPHENSON CLARKE seconded, the following resolution, which was carried *nem. con.*—"That, for the half year ending the 30th of June last, a dividend of 6 per cent. per annum, with a bonus of 6 per cent. per annum, be now declared and paid."

The CHAIRMAN said the directors, anticipating the concurrence of the meeting in this resolution, had had the warrants prepared, so that the proprietors might receive their dividends before leaving.

Mr. O. Brothers and Mr. Stephenson Clarke, the retiring directors, were then re-elected.

On the motion of Mr. NICHOLSON, seconded by Mr. HULETT, a cordial vote of thanks was presented to the directors for their continued attention to the interests of the company, and to the chairman for his conduct in presiding over the business of the meeting.

The CHAIRMAN acknowledged the vote, and, in doing so, took occasion again to refer to the valuable services rendered to the company by their principal officers. He proposed a vote of thanks to them, which was very heartily responded to, and the proceedings terminated.

GREAT CENTRAL GAS CONSUMERS COMPANY.

The Twenty-ninth Half-Yearly Ordinary Meeting of the Shareholders of this Company was held at the London Tavern, on Friday, Oct. 27—Alderman DAKIN in the chair.

The SECRETARY (Mr. Massey) read the advertisement convening the meeting, and the following report, and statement of accounts (for which see next page) were taken as read:—

The directors have the pleasure to place in the hands of the proprietors the revenue and capital accounts of the company, for the half year ending the 30th of June last, together with their report thereon.

It will be seen that after paying all manufacturing charges, as well as the ordinary expenses of maintenance and replacement of works and plant, there remains a balance of £20,673. 9s. 9d., out of which the directors recommend a dividend at the rate of 5 per cent. for the half year, payable on Monday, the 20th of November, together with a further 6 per cent. for arrears of dividends on old shares. This latter payment finally discharges all back dividends receivable under the "Metropolis Gas Act, 1860," and has the effect of rendering payments on account of dividends from Midsummer, 1856, to the present time equivalent to an uniform rate of 10 per cent. per annum; a result equally satisfactory to shareholders and directors, the dividends previous to 1856 having ranged from 5 to 8 per cent. per annum.

As previously announced, it is the intention of the directors to reduce the price of gas to 4s. per 1000 cubic feet, from and after Christmas next; this will, to some extent, diminish the receipts of the company, but looking at the constantly increasing consumption of gas, as evidenced by the accounts submitted to the shareholders from time to time, there is no reason whatever to doubt but that, with careful management, the accustomed dividend of 10 per cent. will be maintained. The directors have thus much pleasure in being able to meet the wishes of the consumers in the reduction of price, and they confidently hope that at no distant date they will be able further to reduce the charge.

The directors have to report that the works and plant are in an efficient condition; it has, however, been found necessary further to enlarge the retort-house, in order that the manufacturing power may be adequate to the requirements of the ensuing winter.

The CHAIRMAN: It now becomes my duty to move—"That the report and accounts for the half year ending June 30, 1865, as circulated among the proprietors, be received and adopted, and that a dividend be now declared at the rate of 5 per cent. for the half year ending the 30th June last, and a further dividend of 6 per cent. on account of arrears of dividend, payable on and after the 20th day of November next." I do not think I shall have occasion to make many observations to-night, for those of the shareholders who have made themselves acquainted with the report just presented must, I am sure, be satisfied with the statement of the position in which we find ourselves in this company. I assure you that your directors and officers have laboured most assiduously in order to make the company what it ought to be—useful to the public, and prosperous to the shareholders. The accounts call for very slight remark from me. It appears from them that we are going on very satisfactorily. Our sale of gas has produced £42,130, as compared with £38,872 for the corresponding period of last year, showing an increase of £3258 in the gas-rental for this half year. The sale of residual products has realized £12,967, as against the sum of £10,954 for the corresponding period of last year, showing an increase in that department of £2013. So far that is very satisfactory. The cost of the production of gas has been £26,882, as against £24,829 last year, so that you see this sum of £5271 on one side of the account has been gained by an additional expenditure on the other of a little over £2000. I think this shows that there has been considerable economy in the working. The distribution account for the past half year is £3425, as against £3963 for the corresponding period last year, so that this department has been conducted with a saving of £538; and when I tell you that all our meters are repaired and replaced, and that everything else has been kept in good order, you will agree with me in thinking that the revenue account is, upon the whole, very satisfactory. Now, gentlemen, there is the absence of one item in this balance-sheet which is altogether new, and I think you will consider it as satisfactory as new—there is no charge under the head of "Law expenses." It certainly has been a subject that we have had to deplore in past years that we have had to fight our way through very expensive litigation. We are now free from litigation, and consequently have no charge on that account in the balance-sheet. Our solicitor has had a purely honorary office this year, and I hope it will long continue to be so. There is another matter for satisfaction to the board in connexion with these accounts, and that is that the item "Arbitrators award," which we have been so familiar with for many years, appears here for the last time. This sum of £517. 10s. 6d. entirely wipes off that affair, and it will never again figure in our accounts. There is yet one more payment of £4750, which remains to be paid in July, 1866, on account of that other misfortune which overtook us—the Wood Street fire—and then that item will be finally expunged from our accounts; so that we see our way to get quite clear before a very long interval. The shareholders will perceive the significant summing up at the end of the account as to the amount available for dividend, and I think they will consider it very satisfactory. We propose, with this £20,317, to give you 5 per cent., being the amount of the parliamentary dividend for the half year, which will absorb £9987. 10s., and 6 per cent. on account of back dividends, thereby extinguishing that account, and which will absorb £10,327. 12s. I am sure the proprietors must feel satisfied, although I see my friend opposite smiles in a kind of equivocal manner, that that item is now extinguished. It is a matter of great satisfaction to us, and I am sure we shall all be content in future to receive our parliamentary 10 per cent. But while I state that, we must also remember that the reserve-fund, which has been very large in our accounts, was laid by with the voluntary assent of the shareholders, to meet what were then dangerous circumstances, and circumstances which might have involved us in large expenses. Therefore, in taking these back dividends we are only paying ourselves from that fund which we had laid aside as a matter of prudence. It is not a profit earned in this year, but an amount taken from a reserve which has been gradually accumulating. And I wish particularly to point out to the shareholders that having extinguished that fund we have received 10 per cent., according to the parliamentary regulation, for the last six years; but you must remember that there was a period of six years—viz., from Sept., 1850, when we commenced our undertaking, until 1856—when we very often had small dividends—on one occasion I believe something like 2 or 2½ per cent. Therefore, we have not yet obtained that which we proposed to ourselves at the time we started—viz., a uniform dividend of 10 per cent. If we were to look for that from the year 1850 there would be some thousands of pounds yet due from the consumers. But we are satisfied with the dividend prescribed by Parliament, and we make the consumers a present of the balance, and this, coupled with the power which the directors feel they now have of reducing the price of gas from the 1st of January next, is a very satisfactory state of things. We are most desirous in every way, while we do our duty properly to the consumers, to pay our shareholders as the Act of Parliament says they should be paid, and which, as a man of business, I say they ought to be paid, for 10 per cent. is not an unreasonable dividend for those who employ their capital in manufacturing purposes, especially when you remember that though we get 10 per cent., that 10 per cent. is a sum which has to cover the possibility of future reductions in the value of our property. Gas property is open to depreciation from improvements in science, which may some day originate a new kind of lighting, the effect of which would be to swamp our undertakings altogether. Therefore, this must be always taken into account, and I have no doubt that the committee of the House of Commons did take it into account, when they allocated 10 per cent. as a fair dividend for the shareholders to receive. But while we have that we feel it incumbent upon us on every opportunity to reduce

HALF-YEARLY STATEMENT OF ACCOUNTS,

Showing the Actual State and Condition of the Concerns of the Great Central Gas Consumers Company, for the Six Months ended the 30th Day of June, 1865.

I. CAPITAL.—*State of the Account at the End of the above Six Months.*

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total paid up.	Total Capital.
Shares. . . . . (14th & 15th Vict., cap. 69.)	19,975	£10	All.	All.	£199,750 0 0

	Rate per Cent.	Amount.	
Borrowed moneys	5	£66,000	66,000 0 0
Profits capitalized	. . . . .		None.
	Total capital		£265,750 0 0

II. REVENUE.—*Account during the above Six Months.*

INCOME.

Balances brought forward—		
Reserve-fund	£ 627 4 1	
Revenue account	527 11 5	
Dividend ditto	17,017 4 0	
		£18,171 19 6
Sale of gas—		
Common gas, at 4s. 6d. per 1000 feet.	£37,583 7 0	
Public lighting and under contracts.	4,547 1 11	
		42,130 8 11
Ditto of residual products—		
Coke and breeze	£10,340 15 9	
Tar and ammoniacal liquid . . .	2,626 13 10	
		12,967 9 7
Total income		£73,269 18 0
Ditto expenditure		72,913 10 3
Balance to revenue next year		£ 356 7 9

EXPENDITURE.

Management—		
Directors allowances	£ 750 0 0	
Salary of secretary and clerks . .	687 0 0	
Collectors commission and pay . .	431 8 0	
Rent, rates, and taxes of offices . .	262 16 0	
General charges, including stationery and printing	898 8 2	
Payment to auditors	75 2 6	
		£3,104 14 8
Manufacture of gas—		
Coals, including carriage, dues, &c.	£18,682 17 4	
Purifying charges	325 9 0	
Supervision and labour	5,489 17 11	
Stores, tools, and implements . .	942 15 7	
Ordinary repair and maintenance of premises.	643 3 7	
Rents, rates, and taxes of manufactory	797 19 4	
		26,882 2 9
Distribution, ordinary repair and maintenance, including service-mains, pipes, &c.	£2,921 11 1	
Meters—		
Restoring and replacing	504 3 3	
		3,425 14 4
Interest paid from profits, on £66,000 borrowed capital, at 5 per cent.	1,650 0 0	
Arbitrators award	517 10 6	
		2,167 10 6
		£35,580 2 3
Balance for shareholders profit.		37,333 8 0
Total expenditure		£72,913 10 3

III. DIVIDENDS.—*Account of all Dividends actually Paid in the above Six Months.*

Balance for shareholders profit as above	£37,333 8 0
	£37,333 8 0

Dividends declared April, 1865	£17,016 6 0
Balance to next half year's account	20,317 2 0
	£37,333 8 0

the price of gas to the consumers, and your directors as a body will, in the next year and the year after, make every effort in their power to reduce the price of gas even below 4s. We shall avail ourselves of every help which science can suggest, and every assistance which the most economical working can give us, in order to effect that object: and as we are increasing in our rental, we have every reason to hope that before long we shall be able to offer the public a further reduction in price. I am quite sure that we shall be quite as pleased to announce it as the public will be to receive it. We have felt from the first, as public servants engaged in the performance of an important public duty, that while we are entitled to have our proper reward in the shape of a fair and honest dividend upon our capital, we ought to seek for that other and no less gratifying reward—the satisfaction of the public. I say this the more emphatically because we have in the City a great deal of discussion with reference to the corporation taking the supply of gas into their own hands. Now, it does strike me as an exceedingly improbable thing that a committee of the House of Commons will ever authorize another body to expend a further capital of a million, or a million and a half, which it must cost in order to supply the City of London, especially as, by their own legislation, they have taken a large and comprehensive view of the question for the whole of the metropolis, and passed an Act for regulating everything in connexion with the supply of gas therein. I do not believe that any committee of the House of Commons will take a particular and exceptional view with regard to the City proper, will abrogate their past legislation, and pass an Act to authorize a competing body to come into our district. I recollect, and you recollect, the laying down of a fresh set of pipes by this company in the year 1850, and we know what inconvenience it necessarily occasioned to the citizens. And not only would there be increased inconvenience from the introduction of another set of mains, but there would be the absolute loss and waste which such a duplication of the mains would involve. In addition to this, too, I believe that in many cases it would be physically impossible to lay down a new set of mains, the soil of the streets being so completely occupied with those already there. These are my reasons for believing that Parliament will not listen to any application for the corporation to invest a million or a million and a half of money to enable them to do a service which is now done under their own direction in the manner prescribed by law. At all events I am quite sure that if such an unlikely thing should be done Parliament will deal justly with all vested rights—all rights created by itself—and that our interests will be fully protected, so that if we do not continue to have our dividends as proprietors in a gas company we shall have our capital repaid by that body which will then take our place. I have every expectation myself that that matter when it is properly discussed will very likely drop. All that we have got to do is to do our duty fairly and honestly, and by exerting ourselves in every way within our power to meet the public service; while we do that, as we have always hitherto endeavoured to do it, I believe we shall be allowed to proceed quietly in our own business. I do not know that I have anything more to say, except that your works and plant have been kept in admirable order, and that everything is going on as satisfactorily as possible. We have had to encounter some additional cost for coals and likewise some further outlay in the item of labour. But all this will, I believe, be covered by the general prosperity which attends the company. I have very great pleasure in proposing the resolution which I read to you at the outset of my remarks.

Alderman GABRIEL seconded the resolution.

Mr. WATSON said he hoped that now the company had got rid of Mr. Croll, and the lawyers, and the doctors, and the bad debts, they would shortly be able to allow the consumers a discount of 10 per cent. off their bills.

The CHAIRMAN said the reduction which the company were now making was equal to more than that, but he did not see how any reduction could very well take the shape of a per centage off the consumers accounts. He would repeat what he had already stated, that the directors would make every effort even after the promised reduction of 6d. per 1000 cubic feet had been made, to effect a further reduction as soon as possible.

The motion was then put, and carried unanimously.

Mr. BARBER said the formal business of the meeting being now at an end, he thought those who sat on the same side of the table as himself would not be disposed to separate without expressing their satisfaction at the very satisfactory position of the company, and their obligations to the directors by whose able management this state of things had been brought about. The chairman had made an able speech, in which he explained very fully every matter of interest connected with their affairs. He had also alluded to the threat of the corporation of the City of London to agitate again in Parliament, and to interfere with the Metropolis Gas Act. He (Mr. Barber) quite concurred with the chairman in the opinion that it was not very likely Parliament would listen to their application, considering that the Metropolis Gas Act most distinctly expressed the opinion of the Legislature that the districting system was the right one, and that there ought to be but one set of mains in each street; and considering, moreover, that the corporation did not put in any appearance before Parliament when that Act was so fully discussed and finally passed in its present shape. The shareholders might very well leave that matter in the hands of the directors without the least apprehension that their interests would be unprotected in the face of such an opposition as that. With these remarks he had much pleasure in moving a cordial vote of thanks to the directors for their able management of the company's affairs.

Alderman ABBISS seconded the motion, which was put and agreed to *nem. con.*

A PROPRIETOR inquired whether it would not be practicable and advisable to issue shares to the amount of the borrowed money, £66,000, and allot them among the present proprietors.

The CHAIRMAN said the company were bound to comply strictly with their Act of Parliament, by which their share capital was limited to £200,000, and their borrowing powers to £66,000. Referring to the vote just adopted, he said that he and his colleagues were greatly encouraged by this renewed mark of the confidence of the proprietors. They had acted together for many years, and through many difficulties, and it was very gratifying to look back and see how the company had progressed from time to time till it had attained its present state of prosperity.

THE ACCOUNTS OF THE BIRMINGHAM GAS COMPANIES, FOR THE YEAR ENDING JUNE 30, 1865.

BIRMINGHAM AND STAFFORDSHIRE GASLIGHT COMPANY.

Dr. — *Profit and Loss Account, June 30, 1865.* — *Cr.*

To Coals	£68,078	4	2	By Balance brought from last year's account	£18,780	18	9
Purifying materials and process	1,503	9	10	Sale of gas, after deducting £4519. 1s. 1d., estimated discounts and bad debts	109,320	8	2
Repair and maintenance of meters, mains, service-pipes, and other works	19,462	1	7	Coke and breeze	42,389	6	10
Wages	12,938	15	1	Tar and other residuals and fittings	17,402	17	4
Lamps (providing, lighting, extinguishing, cleaning, and and repairing)	2,883	18	2				
Rates and taxes	3,796	4	9				
Salaries, collectors commission, and payments to directors	6,665	1	1				
Interest on loans	1,339	0	11				
Professional charges and incidental expenses	4,748	18	6				
Two per cent. on cost of works for depreciation	8,148	16	11				
Dividends paid to proprietors, viz.:—							
10 per cent. on £320,400 capital, raised under Act of 8 & 9 Vict., c. 66	32,040	0	0				
7½ per cent. on £50,000 capital, raised under Act of 21 Vict., c. 1	3,750	0	0				
Miscellaneous payments	88	11	7				
Amount carried to reserve-fund	885	18	0				
Loss by the failure of Messrs. Attwoods and Co.'s bank	2,440	17	8				
Balance carried to next year's account	19,123	12	1				
	£187,893	10	4		£187,893	10	4

Dr. — *Balance-Sheet.* — *Cr.*

To Capital raised under Act Vict. 8 & 9, c. 66	£320,400	0	0	By Cost of works, June 30, 1864	£407,384	11	6
Ditto ditto Vict. 21, c. 8	75,000	0	0	Deduct for depreciation	8,148	16	11
Ditto ditto Vict. 27 & 28, not bearing dividend	10,906	0	0		£399,235	14	7
Amount of loans	33,325	0	0	Add extensions made during the year	30,560	17	0
Reserved fund	53,788	7	7			£429,796	11 7
Amount owing by the company	35,195	7	3	Amount invested of the reserve-fund		37,280	9 7
Unclaimed dividends	147	1	9	Calls unpaid		320	0 0
Amount prepaid on 6th call	4,355	0	0	Amount owing to the company for gas, coke, residual products, fittings, &c. (exclusive of estimated bad debts)		54,373	11 4
Balance as above	19,123	12	1	Coals in stock		6,500	0 0
				Residual products and other stock		4,960	0 0
				Cash in hands of treasurer and cashier		19,009	16 2
	£552,240	8	8		£552,240	8	8

BIRMINGHAM GASLIGHT AND COKE COMPANY.

Dr. — *Capital Account, June 30, 1865.* — *Cr.*

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
Birmingham Gas Act, 1855, or 18 Vict., c. 48	1200	Class A, limited to 9 per cent.	£80	£ 96,000	
	400	Class B, ditto to 9 per cent.	8	3,200	
	2500	New ordinary, ditto 7½ per cent.	40	100,000	
	1250	Ditto, ditto 7½ per cent.	30	37,500	
				236,700	
		Cash received on account of final call, ditto		11,700	
					£248,400
		Ditto ditto, not bearing dividend			3,531
		Borrowed money under the above Act—"bonds"			40,950
		Total capital			£292,881

Balances brought forward.

	Midsummer, 1864.	Midsummer, 1865.
Reserved fund, all invested	£27,046 6 0	£26,862 2 6
Dividend account, unpaid	24 12 7	124 0 5
Revenue account	2,742 14 1	399 14 2

Revenue Account.

RECEIPT.				EXPENDITURE.			
Sale of gas, after deducting discounts, adjustments, and bad debts, and expenses of public lamps	£59,218	4	0	Management—			
Coke and breeze	24,569	11	4	Office, salaries, collectors commissions, and payments to directors and auditors	£3,979	17	2
Tar, ammoniacal liquor, sundries, and profit on fittings	7,210	8	6	Stationery, printing, and incidental expenses	852	3	4
				Repairs and alterations of offices and workshops	315	8	5
					£5,147	8	11
				Manufacture of gas—			
				Coals, including tonnage and delivery	£41,024	7	6
				Purifying materials and wages	859	2	5
				Supervision and labour	10,230	2	10
				Retorts, tools, implements, with ordinary repairs and maintenance of premises	5,095	6	7
				Rates and taxes on manufactory, mains, and offices	2,596	3	6
				Ground-rent on leasehold works	101	8	6
					59,906	11	4
				Distribution—			
				Ordinary repairs and maintenance of mains, with costs and repairs of services	4,202	7	8
				Meters—			
				Restoring, replacing, and maintaining	4,078	2	9
				Law and parliamentary charges	245	19	6
				Interest paid on loan capital	1,540	9	7
				Balance, being shareholders profit	15,877	4	1
	£90,998	3	10		£90,998	3	10

Dr. — *Dividend Account.* — *Cr.*

To Dividends on £99,200, A and B shares, at 9 per cent.	£ 8,927	19	0	By Balance from previous year	£ 2,742	14	1
Dividends on £137,500, new ordinary shares, at 7½ per cent.	10,292	5	0	Ditto being shareholders profit	15,877	4	1
	£19,220	4	0	Taken from reserved fund	1,000	0	0
Balance forward to current year	399	14	2				
	£19,619	18	2		£19,619	18	2

METROPOLIS GAS SUPPLY.

CITY OF LONDON COURT OF SEWERS, GUILDHALL—TUESDAY, OCT. 17.

At the Meeting of the Commissioners this day,

Dr. LETHEBY submitted his weekly report of the illuminating power and chemical purity of the gas supplied to the City, from which it appeared that the illuminating power of the gas was, in the case of all the companies, above the requirements of the Act of Parliament, the average power being in each case equal to rather more than 13 sperm candles of standard quality, but the chemical quality of the Chartered gas was not equal to the requirements of the Act of Parliament, on account of its containing an excess of ammonia, and the gas of the Great Central Company had been constantly overcharged with sulphur. In fact, the Chartered gas had been invariably impure from an excess of ammonia, and the Great Central was almost invariably so from an excess of sulphur. Taking the 262 examinations which had been made on the chemical quality of the gas supplied by each of the companies since the month of August, 1864, the gas of the Great Central Company had failed to fulfil the requirements of the Act on 219 occasions, whereas that of the Chartered had failed on 76, and that of the City on 25 only; so that while the City Company had supplied gas which had, in all respects, equalled the standard of the Act, the Chartered Company had furnished a gas containing an excess of ammonia, and the Great Central a gas overcharged with sulphur. He submitted, therefore, that the evidence furnished by the constantly good quality of the City Company's gas was proof that the Chartered and Great Central Companies were able, and should be required, to fulfil the requirements of the Act of Parliament.

It was decided that a copy of the report should be sent to each of the companies; and it was further referred to the special Gas Committee to take such proceedings as they might think proper.

COURT OF COMMON COUNCIL, GUILDHALL—THURSDAY, OCT. 19.

At the Meeting of the Court this day—the Right Hon. the LORD MAYOR presiding,

Mr. R. B. WHITESIDE presented a petition from the gas consumers of the City, praying the court to authorize the General Purposes Committee to engage professional assistance for obtaining the information necessary to enable them to apply to Parliament for powers to erect gas-works, and to manufacture or contract for the supply of gas, and to lay down new or purchase the existing mains for the distribution of gas to the citizens of London. In urging the prayer of the petition, he briefly alluded to the decision come to by the court in June last, when it was referred to the General Purposes Committee, and he said the committee were about to bring up a report recommending the court to do that which the petitioners asked them to do. He would, therefore, move that it be referred to the committee to carry out the prayer of the petition.

Mr. E. DRESSER ROGERS seconded the proposition, and in supporting an application to Parliament for powers for the corporation to erect works, referred to Manchester, where the gas supply was carried out by the corporation, who were enabled, after paying income-tax and charging £12,690 to depreciation of works, to carry forward a net balance of £49,545 to be applied to public purposes in that city. Surely such an example ought to be followed in the City of London.

Mr. HAINES, chairman of the General Purposes Committee, asked for permission to bring up the report of the committee on the reference of June last. What they asked was that the court should give them authority to engage professional assistance in obtaining the information necessary in connexion with an application to Parliament for powers to erect works, and to engage for the supply of gas to the citizens should such a course be adopted by the court.

Deputy DE JERSEY pointed out that such a course could not be taken without suspending one of the standing orders of the court, as the proposition involved the expenditure of the City's cash.

Mr. H. L. TAYLOR apprehended that, before applying to Parliament, a question of this importance must be calmly and dispassionately considered, and he suggested that it should be adjourned until a future court.

The LORD MAYOR, having been appealed to, said he would call a special court for Thursday next, for the consideration of the subject, and he would direct that it be placed first on the paper of business.

Ultimately, after some further consideration, the suggestion for adjourning the question was agreed to, and the Lord Mayor promised to call a special court for Thursday.

THURSDAY, OCT. 26.

The Court met this day specially for the consideration of the question of the supply of gas to the City—the Right Hon. the LORD MAYOR in the chair.

The TOWN-CLERK read the following report from the General Purposes Committee:—

To the Right Hon. the Lord Mayor, Aldermen, and Commons of the City of London, in Common Council assembled—

We whose names are hereunto subscribed of your Committee for General Purposes, to whom, on the 22nd day of June last, was referred back our report then presented relative to the supply of gas, with instructions to confer with the Law, Parliamentary, and City Courts Committee, to consider as to the best method of proceeding, at the earliest possible period, with an application to Parliament for an Act to empower the corporation either to purchase the existing mains, plant, and works in or supplying the City of London, and to contract for the supply of gas into those mains, or to erect works and enter upon the manufacture and distribution of gas to the consumers, as is now so successfully carried out by the corporation of Manchester and other towns, do certify, "That we accordingly held a conference with the Law, Parliamentary, and City Courts Committee, and having heard Mr. E. Dresser Rogers, the mover of the reference in this honourable court upon the subject, we, after due inquiry, passed the following resolution, viz.:—

> "That in the opinion of this committee in conference with the Law, Parliamentary, and City Courts Committee, the most desirable course to be adopted is for the corporation to apply for parliamentary powers to erect works and engage in the supply of gas to the citizens of London.

"Upon advising with the officers of the corporation as to the steps to be taken should the foregoing opinion be agreed to by this court, we find that before proceeding with an application to Parliament it is requisite that we should be furnished with information as to any sites eligible for the erection of works for the supply of gas to the City, and also as to the probable cost of land, and of the works, mains, and other accessories necessary for such supply.

"We have consulted the City architect upon the subject, and we beg now to recommend that we should be authorized to engage such professional assistance as may be required in obtaining the information upon the important points referred to.

"All which we submit to the judgment of this honourable court.

"Dated this 5th day of October, 1865.

"(Signed) HENRY HAINES, Chairman.
(And others.)

Mr. HAINES, in moving—"That the court do agree with the committee in their report," referred to the circumstances under which the committee was first appointed, and the various petitions of the citizens referred to them for consideration. The committee, it would be remembered, brought up a report on the 22nd of June last, containing the result of their investigations up to that time, and it was then unanimously resolved—"That the report be referred back to the said committee, with instructions to confer with the Law, Parliamentary, and City Courts Committee to consider as to the best method of proceeding, at the earliest possible period, with an application to Parliament for an Act to empower the corporation either to purchase the existing mains, plant, and works in or supplying the City of London, and to contract for the supply of gas into those mains, or to erect works and enter into the manufacture and distribution of gas to the consumers, as is now so successfully carried on by the corporation of Manchester and other towns." The first recommendation was that the corporation should buy the pipes and mains of the existing gas companies, and contract with them for a supply of gas to the City. But he believed it must be apparent to every one that the companies would never sell to the corporation the very means of their existence; and, as he was told that the pipes were many of them very old and partly clogged up, the purchase might, after all, be a very expensive one. That being the case, the alternative was suggested that the corporation should obtain powers to erect works and manufacture gas for themselves, for which purpose, the committee having resolved to recommend this course, it became necessary to get certain information in order to guide them as to the best means for effecting their object. But the committee found themselves stopped in these proceedings, as they were told by their legal officers that they had no funds at their disposal to pay the parties who might be engaged by them. Their only course, therefore, was to come back to the court, and ask for authority to employ the necessary professional assistance. If the corporation accepted the recommendation of the committee contained in the report just read, they would have to employ persons to prepare plans and elevations of the proposed works; they would also have to look out for a suitable site where such works could be erected without being a nuisance. It appeared that about five acres of land would be required, and that it must be so situated as to possess facilities of water conveyance for coals and other materials. In the report prepared by the engineer to the Commissioners of Sewers, some time ago, it was stated that the whole expense that would be incurred in the erection of such works was from £250,000 to £300,000, and the committee had been in communication with the chamberlain to ascertain whether they could have the City cash to that amount. The chamberlain stated that the money could be obtained by issuing bonds at 4½ per cent., so that if they borrowed £300,000 it would involve the payment of £13,500 per annum by way of interest. No doubt, in making the necessary application to Parliament for powers to erect works, the corporation would be met with all manner of opposition, and every obstacle would be thrown in their way by those whose interests were affected by the proposal. The three City companies would fight very strongly against them in the House of Commons, and the bill would be resisted at every stage, so that a very heavy expense in that way would be incurred. Now the committee had no means to meet that expense and carry out the latter part of the directions of the court; they were told that without an authority for the purpose they could not enter upon those proceedings, except at the risk of having to meet the outlay from their own pockets. They therefore felt it desirable to submit their present position to the court, and to ask for authority to engage professional assistance in obtaining the information necessary in connection with an application to Parliament for powers to erect works and engage for the supply of gas to the citizens, should such a course be adopted by the court. The corporation having decided almost if not quite unanimously, in a very full court, to proceed to Parliament, the committee were placed in a somewhat anomalous position in not being able to carry out their determination Under these circumstances, he moved—"That the report of the committee be agreed to, and that it be referred back to them to take the necessary steps to obtain the information required."

Mr. E. DRESSER ROGERS said he rose for the purpose of moving an amendment to the motion—an amendment which slightly altered the motion as it stood, and made an addition to it. He proposed to leave out the closing words—"should such a course be adopted by the court," and to substitute these words—"and that the committee be empowered to give the necessary parliamentary notices." His reason for doing so was simply this—the question of the gas supply must not be bilked or blown upon at all, but must be brought forward and boldly dealt with by the court. On the 22nd of June last, upon a motion brought forward by himself, the court by an unanimous vote affirmed the principle that they would, as a corporation, take upon themselves the supply of gas to the citizens of London. Therefore, the question as a question of supply was then settled, and it was referred to the General Purposes Committee to confer with the Law, Parliamentary, and City Courts Committee, to consider what was the best course to pursue for obtaining the desired result. He believed the General Purposes Committee had taken the greatest care they could upon the subject, and had given the largest amount of attention in their power to work this matter out. They were kind enough to invite him to a conference with them, at which conference he found there was but one mind among the gentlemen present—namely, that they still affirmed the principle which the court had laid down. It was not necessary to occupy much time by reopening the old question of the unsatisfactory supply of gas in the City, for the members knew, of course, very well the reason of their attention being now called to it. There was an universal feeling amongst the consumers that they were suffering from a giant monopoly, and that they were not getting a sufficient quantity of gas at a fair price. The question had frequently been before this court, and it had also received the very serious attention of the Commissioner of Sewers, and they had been compelled to come to the same conclusion—that some alteration was required, so far as the consumers were concerned. The question was one that could not be put off, but must be settled. Every time it was discussed fresh friends came forward to support them. Some people argued that the Act of 1860 must be changed, that they should go to Parliament to obtain some alteration or amelioration of the conditions of that Act. Now, many of them knew that going to Parliament upon any question affecting the interests of the gas monopolists was, under any circumstances, liable to a great amount of opposition, and consequently a great amount of expense; but he felt himself certain that no alteration which they would obtain in the Gas Act of 1860 would get them cheap gas of a good quality. They all knew the history of that bill—how it was got up by those who wished to see gas reform, and how it came out of the House of Commons, not a bill in favour of the gas consumers, but a bill largely in favour of the gas companies themselves. He believed there were some clauses in that bill that would greatly benefit the consumers if they were properly carried out by the local authorities, but he felt strongly that the patching up of that measure would be of little or no use to the consumers. One or two reasons he might mention why a change was required. He thought a change was required on the score of

capital. At present the capital increased by accumulation of bonuses, also in respect of bad works, for mistakes being made, and other things of that kind. A large amount of interest was paid not on capital required by good works and good management, but on capital unfairly accumulated, and which the consumers of gas were called upon to meet. Having started with that primary consideration, another question presented itself in a question of this kind—viz., that the supply of gas should not be in the hands of those who had a pecuniary consideration in the matter. The capital of a gas company ought to bear a comparison to the amount of rental received for gas. But how stood the fact with reference to the City companies? The capital of the Chartered Company was £314, for every £100 of rental; the Great Central, £347 for every £100 rental; and the City, £445 for every £100 rental; and this caused inequality in the price of gas, because, as could readily be seen, the dividend clause of the Metropolis Gas Act enabled the companies to pay 10 per cent. upon capital not actually required for the erection of works and plant, but capital unfairly accumulated. Let them see what was the operation of that dividend clause at the present moment. While in the City of London the companies were charging 4s. 6d. per 1000 for gas, on the other side of the water the South Metropolitan Company—which was certainly the best conducted of the London companies, and the chairman of which (Mr. T. B. Simpson) was a member of that court—were supplying gas of a better quality, and of greater purity, at 3s. 4d. per 1000 feet. The Act of Parliament in the City provided for 12-candle gas, whilst in more recent Acts of Parliament 16-candle gas was required to be supplied. Beyond this the weekly reports presented to the Court of Sewers showed that the gas supplied to the City was always overcharged with ammonia and sulphur. If it was possible to manufacture gas without these disgusting and unpleasant materials out of the City, surely it could be done within the walls. Gas engineers and chemists said that it could be manufactured without them, and what was being done elsewhere could be done here. It was said by some people, let an independent company be started to supply the citizens. He thought they had already had very good proof of what they might expect in such a case, by the establishment of the present Great Gentral Gas Company. The corporation must, he thought, look at this question boldly and fairly, and nothing would do but for the corporation to take the matter into their own hands. In doing this there were many precedents before them. There were no less than fifty-eight towns where gas was so supplied; amongst others, at Manchester, Oldham, Rochdale, Stockport. Halifax, Doncaster, Walsall; and it was done profitably. At Manchester, the corporation, after paying every expense, were enabled to realize profits to the large amount of £59,545 last year, and that was after paying all liabilities, and setting aside £12,690 odd for depreciation of plant and so forth. At Halifax, again, the corporation has purchased the works of an existing company, and, by the accounts published in June, 1864, it appeared that the capital was £123,275. The income during the year was £24,359, and the expenditure £14,599, leaving a profit of £9759, or 8 per cent., for the year. They supplied the public lamps at 1s. 8d. per 1000 feet, and the private consumers from 3s. 2d. to 4s. Gas was supplied equally cheap at Walsall and other places, and if it could be done there, it could be done in the City. At Manchester the price was 3s. 2d. to private consumers for 20-candle gas, while in the City of London the charge was 4s. 6d. for 10-candle gas. Now as to the mode by which the corporation should undertake the supply. He did not say that they should manufacture the gas themselves, but rather that they should erect the works, contract for the manufacture of the gas, and supply the consumers. There were plenty of spots in the outskirts of London suitable for the erection of such works, which might be obtained at a comparatively small cost, and the gas manufactured there might be conveyed along a line of railway into the City. And there were dozens of men—responsible men—as gas engineers who would take such works upon lease, and supply the gas into the mains at so much per 1000 cubic feet. This was a thing which had already been done. Mr. Croll contracted with the Great Central Gas Company in that way, and also with the Surrey Consumers Company, the companies themselves distributing the gas to the consumers. With reference to the question of amount of capital required, he had before him the estimate of a gas engineer, whose name he would not mention, but one who was perfectly competent to give an opinion upon the subject, and that gentleman quite agreed in the statement made in the report of the Commissioners of Sewers, that £250,000 would be sufficient. Now, looking upon that fact, and remembering some things which had taken place in the corporation, he could not help thinking that the provision of this amount of capital for an object so essential to the interests of the citizens ought not to present any difficulties. Only two or three years ago all England rang with the splendid hospitality of the corporation in welcoming the Princess of Wales to this country. In this way they spent something like £100,000, which sum was entirely and totally unproductive; and would the corporation say they would not spend £250,000 in order to supply the citizens with cheap gas? Again, they embarked, a short time ago, £200,000 in shares in the Metropolitan Railway Company. He quite agreed that the speculation was a proper one, and he should have supported it if he had been a member of the court. But instead of gaining, as they did, several thousands of pounds by the transaction, they might have lost a large sum. Would they say now they would not invest £250,000 in gas-works for the citizens? He thought they would see that the question of capital was not such a difficult one, after all. The honourable member proceeded at great length into a comparison of the capitals of the companies, which he asserted to be largely in excess of their actual requirements. He then quoted the price charged for gas in a number of towns throughout England, where he said the cost of production was not larger than in London. From this he passed to the question of the public lighting, and quoted the prices at which the contracts had been taken of late years, to show the enormous increase which had taken place, notwithstanding the improved modes of manufacture which modern science had opened; and he concluded by urging that this was a subject which touched the pockets of every consumer of gas, and that the corporation, by taking up the question boldly, would be putting into every consumer's pocket money which was now being taken out of it. He advised them to show the public that they were fully alive to its importance; that they were prepared to take upon themselves a course the citizens so much desired; and even if they did not succeed, they would have the satisfaction of knowing that at all events they had done their duty.

Mr. RUDKIN, as the seconder of the original reference, said he had great pleasure in seconding the amendment proposed by Mr. Rogers. It appeared to him that the recommendation upon the paper of business did not go far enough. The last reference to the committee empowered them, as he understood it, to obtain the necessary information and to give the necessary notices; but as the committee seemed to think it did not go to that extent it was desirable that the amendment now proposed should receive the sanction of the court. It was not necessary, after the very able and lucid speech to which they had just listened, to enter upon a lengthened discussion of the subject. Certainly no such discussion would be raised by those who advocated the course which Mr. Rogers had indicated. He was quite content to let the matter stand as it was, but he should be glad to hear whether any sound arguments could be adduced on the other side.

On the question being put,

Mr. ROWE, amidst some interruption, contested the position taken by Mr. Rogers as to the capitals of the companies supplying the City with gas. In making his calculation, Mr. Rogers had deducted a certain amount from the capital of the Chartered Company, because that he said was applicable to the supply of a district outside the City boundary. But he had not done the same in reference to the City Company, although they too supplied a portion of the metropolis beyond the City proper. Then with reference to the conduct of the Great Central Company, Mr. Rogers had blamed them for raising the price of gas to 4s. 6d.; but he omitted to tell the court that they did not do so until they were compelled by Parliament to supply gas of a higher illuminating power than they originally contracted to give. At the outset they were only required to give gas of an illuminating power of 10 candles, but they were now, as an undoubted fact, supplying 14-candle gas—their actual working standard being considerably higher than their parliamentary standard. It was right there should be fair play for the companies in this matter, and that gentlemen should not give the facts on one side only. While others were desirous of lowering the price of gas to the public, those who were engaged in the manufacture of gas were as deeply interested as they were in endeavouring to supply it at the lowest possible charge. As men of business, the gas companies looked to the increase of consumption, for it was that which paid them, and not the maintenance of high prices. The company which he had the honour to belong to had already intimated their intention of reducing the price to 4s. per 1000 cubic feet at Christmas, which, considering the quality of the gas they were supplying, was, he maintained, a very reasonable charge. If the corporation, however, determined to go to Parliament, he felt that it was fortunate for the gas companies that their interests would not be entirely overlooked. The Legislature of Great Britain would be prepared to show some consideration for those who had invested an enormous amount of capital in these undertakings, however little consideration they might receive at the hands of the corporation of London. The honourable gentleman who moved the amendment told the court that they could erect works for the supply of the City with a capital of £250,000 or £300,000. All he (Mr. Rowe) could say upon that point was that the honourable gentleman had gone to an engineer whose estimate for such works was considerably lower than that of any other engineer in the metropolis. It appeared to him that the first business of the corporation should be to direct the committee to obtain a scientific opinion with reference to the quality of the present supply of gas to the City. The gentlemen who appeared at the bar of the court with a petition, and who were desirous of getting cheap gas, were asked by him upon what they grounded their opinion that the quality of the gas at present supplied was bad. They said they considered that their own eyes and noses were sufficient to enable them to judge; and on that occasion the Right Hon. the Lord Mayor told him that if he came into the City after nine o'clock at night, he would have no difficulty in judging for himself on the subject; but his lordship must know that it was necessarily the case that the streets were darker when all the shops were closed. On the present occasion he should not attempt to oppose the motion, seeing the feeling of the court was all one way. He would only say he was satisfied that when the matter came before Parliament the companies would receive that full consideration they were entitled to for the manner in which they had hitherto fulfilled their duty in supplying gas of a good quality and illuminating power to the City of London. The arguments used in support of the amendment had been exceedingly unfair. It was no criterion to compare the price of gas in London with coals at 16s. per ton, with the price in towns in the north of England where coals were sold at 5s. and 6s. It was very easy to quote the names of places where gas was sold cheaper than in London; but if he had known that this line of argument was to be taken, he could have adduced the names of a hundred places where it was charged at a higher rate. The court ought not to lose sight of the enormous saving which the Great Central Company had been the means of effecting. When they first started, gas was being charged 7s. per 1000. (No, no.) Certainly it was 6s., at least; then it came down to 5s.; and ultimately to 4s. It was only when Parliament imposed upon them the obligation of giving a higher illuminating power that they charged the additional 6d., which they were fully authorized to take. Of course, if the citizens got a superior article, they must be prepared to give an additional price.

Mr. R. N. PHILLIPS said the court had listened to the statements of the honourable gentleman in the interests of the gas companies, but he would like to ask Mr. Rowe this question—What had the companies done, seeing there had been meetings in every ward in the City to complain of the quality and price of the gas, to remedy the great evils which existed? The fact was they had done nothing, they trusted in their own security. They were banded together to uphold their own interests, and, with the water and railway companies, they formed a most formidable body to oppose everything which they conceived would interfere with their vested rights. The question was, whether the citizens of London could put up with the existing state of things any longer. He thought it had been clearly proved by the mover of the amendment that the time had come when the court ought to interfere. He hoped that they would show themselves in earnest in the matter, and that the effect would be to bring about a reduction in the price and an improvement in the quality of the gas supplied to the city.

Deputy DE JERSEY said he should not have troubled the court with any remarks, but for the observations of the honourable member opposite (Mr. Rowe). No doubt his worthy friend had made those observations in full honesty of purpose, but then he should have taken care to represent things in the right light. He had said that when the corporation went before Parliament due consideration would be given to the fact of the large capitals invested by the gas companies in their undertakings. Unquestionably that would be so; but he hoped Parliament would also take into consideration the capital actually raised by the companies for the erection of works and plant, and not the capital added for the purpose of making shares. This was a very important feature, for there was a great difference between the two. It was very easy to understand that at the present day works equally good with those upon which the City Company had expended £450,000 might be erected for £200,000. He was quite sure that Parliament would take this into consideration, and do justice, not only to the gas companies, but also to the consumers of gas and the public generally. His friend (Mr. Rowe) had stated that the Great Central Company, to which he belonged, had done great things for the community at large—that they had reduced the price of gas, and had produced gas of perfect quality.

Now, he (Mr. De Jersey) would gainsay both propositions. True, the price of gas was 6s. when the Great Central came into existence upon the shoulders of the citizens; but the promises which were held out by those who promoted that company had not been carried out.

Mr. Rowe: Because the company were left in the lurch.

Mr. De Jersey: The corporation did not leave them in the lurch.

Mr. Rowe: But the public did.

Mr. De Jersey said the company never could have come into existence at all but for the support of the corporation, and yet they had not fulfilled the promises they then made. Mr Rowe took great credit to the company for having now intimated that they were about to take 6d. off the price of gas. But he forgot to tell the court that they first of all put that 6d. on. They had not voluntarily surrendered the additional 6d.—it was only when public pressure was put upon them that they were compelled to give it up. They raised the price of gas 6d. per 1000, in defiance of public opinion, and in defiance, he had almost said, of moral honesty, in relation to the promises made to the public at large. And when compelled to give it up, when public opinion was brought to bear upon them, they were not candid enough to do it at the moment; they looked to their own interests first, and said, "We will not take it off now—we will take it off next Christmas." With regard to the purity of their gas, did the honourable member mean to tell him that it was equal to the parliamentary standard, when he must know that the weekly returns made by the gas analyst of the City proved that though 14-candle illuminating power gas was supplied the gas was deficient in purity? The public complained, and had a right to complain, of the excess of sulphur in the gas; but, though complaints were made every week, there was no remedy afforded. His honourable friend must know that in Manchester and in many other towns of the kingdom gas with an infinitely less quantity of sulphur in it was supplied. And there was no difficulty in preventing the excess of this impurity; its presence was to be accounted for by some action or operation of the company, which ought to be done away with. If the corporation went to Parliament, probably Parliament would do as they had done in most of the Acts passed since 1860, insist, not upon gas of 14-candle power being supplied, but would raise the standard to 16 or 18 candles, or even perhaps 20 candles. And more than that—it was well known that in modern Acts of Parliament the limit with reference to sulphur was less than 20 grains per 100 feet, and he should like to know what the Great Central Company would say when the standard was reduced to 14 grains. He would only add that he thought it was quite time something was done to put the citizens of London in possession of that which was promised to them when that company was started.

Mr. Macgeorge asked the chairman of the Court of Sewers whether it was true, as stated in a recent report issued by the engineer to the commissioners, that in 1854 the cost of the public lighting of the City of London was £8733; that in 1857 it had increased to £11,792; that in 1861 it had increased to £12,855; and that last year it was nearly £15,000. If that were the case, unless some explanation were afforded, it was certainly one of the most extraordinary statements he had ever heard. As far as his experience went, he believed the City of London was supplied with the worst and most expensive gas of any city in the world.

Mr. De Jersey said there could be no doubt as to the facts contained in the report alluded to. The figures had been carefully collated, and might be relied upon. The explanation was, that in the former years there was competition, and now there was none. The companies had taken care, under the late Act of Parliament, to have the City districted in such a way that when the commissioners received tenders for the public lights it was a farce, and there was no remedy for it. Last year, for instance, they had a tender from one company, say for £4. 9s. per lamp, and from another for £4. 8s.; but the commissioners were bound to take the highest tender, because the company offering the lowest price were not supplying gas in the particular district referred to, and required an additional payment of 10s. per lamp for laying on services.

Mr. E. Browning said it was quite correct, as he had found by experience, that the consumers if dissatisfied with one company could not go to another, because the companies had entered into a combination not to interfere with each other's customers. The companies did just as they liked, and the public had no means of redress. He hoped the corporation would not listen to any promises which the companies might make as to improving the quality or reducing the price of gas, for they might depend upon it that whenever the companies found themselves strong enough to carry out their own interests they would throw the citizens overboard and do just as they thought proper, as they had done before. It would be suicidal for the court to pay the slightest attention to any offers which the companies might make as to the future. There was but one course open to them, and that was to apply to Parliament for the necessary powers to acquire works and mains of their own.

Deputy Elliott said there was such a thing known in the world as a panic. It usually occurred in the army, and when a body of soldiers were once seized with a panic, it was no use attempting to bring them back again to anything like discipline and order. But a panic sometimes seized other bodies than the army, and at the present moment it seemed to have taken possession of the citizens of London with regard to the gas question. The corporation also seemed to be affected by it, and whilst his usually grave and thoughtful assembly was under the influence of a panic, he felt sure it would be of little use attempting to discuss the merits of the question. He would however just say this, that those among them who remembered the history of the first gas uproar in the City, knew well that he was no great friend to the Great Central Gas Company. He was no more so now than he was then, for he believed that company to have been "conceived in sin and shapen in iniquity." (Roars of laughter.) And now they found the engineer "hoist with his own petard," they saw the same unseemly, the same unscrupulous, the same unmeasured—it might be unparliamentary for him to say, the same dishonest—opposition raised against them, which they raised at the London Tavern, and elsewhere, in the minds of the people against the old companies. They found that in this court they were followed up with the same kind of wild and unscrupulous oratory——(Great interruption.) He would only say one word—though, perhaps, it would not have much effect there—and that was that such statements as were contained in the speech they had just listened to, eloquent and unrivalled as it was, would before a committee of the House of Commons be speedily swept off to the winds. A committee of the House of Commons would take an equitable view of these matters; they would have something to say about the "rights of property" as well as the rights of consumers; and though such a committee would not allow the public to be oppressed by either gas or water companies, but would take a large and comprehensive view of the public interests, they would protect those joint-stock companies which had invested capital in what was then an untried experiment, and not impose upon them the obligation to supply their commodities at a price to be regulated by the success of a successful experiment. That was how a committee of the House of Commons would treat this question; they had always treated it with equity, and would do so again. Socialism roaring against the rights of property had not yet made its way into the House of Commons, and would not do so until a good dose of the representatives were elected by the great mass of the people who had nothing to lose. Just to show how easily the sort of statements they had been listening to were made, it was said that the price of gas was 4s. 6d. So it was; but then they all knew the Act of Parliament required that so soon as the companies were able to realize 10 per cent., the price of gas must be reduced.

Mr. De Jersey: After they have paid up arrears of dividend.

Deputy Elliott: And a most righteous provision it was that those who held property, which had been worked for many years at a loss, should be allowed by Act of Parliament to recoup themselves when they could do so equitably. The company now said that they were about to reduce the price to 4s., but the court had been told to-day that gas could be supplied at less than that, and they were directed to look at the South Metropolitan Company, who, with the same expense for coals, wages, &c., were supplying it at 3s. 4d. Of course it was argued that what could be done there could be done here. But was it so? It was true the South Metropolitan Company were selling gas at 3s. 4d., and paying their shareholders 10 per cent. Why? Not upon such conditions as any three members of this court would wish it to be done in the City. The company at present in action there was founded upon an insolvent company, and they bought the works for £100,000, which was £120,000 less than they cost. They sold gas, therefore, at a price which was not regulated by the first cost of the plant, but by the ruinous price to their predecessors at which they bought it. The facts which had been stated to the court required explanation, and when that explanation was given the facts vanished into nothing. It was always matter of regret and pain when they saw bankrupt stocks sold off at less than the fair market price. Why? Because they regretted that any man should become bankrupt, and that the general price of commodities should be cast down by people being able to buy at one shop for 3s. 4d. what at another they must pay 4s. for. An immense mass of oratory had been introduced into the discussion of this question, but when the statements made were fully and fairly examined, and patiently investigated, they vanished like smoke. He might be allowed just to say that he had not the slightest pecuniary interest in the gas question; he had no shares in any gas company, and certainly none in the Great Central. He took up the matter upon a larger principle than that which related to the mere price of gas; he took it up upon that large principle of fair dealing which should enter into all the affairs of life, strongly convinced that anything proposed to be done which involved the confiscation of property, whether of water or of gas companies, was a most dangerous thing for a body like the corporation of the City of London to be in any way engaged in. Just let that outery prevail which had of late years become chronic, against railways, which was now making its way against gas companies, and would one day be raised against water companies, and, after awhile, hounded on by eloquent hired speakers——(Interruption.)

Mr. Dresser Rogers: My Lord Mayor, I rise to order, and must ask the worthy deputy to retract what he has said about hired orators.

Deputy Elliott: I am sorry if I have used an expression which is unparliamentary. I will say eloquent orators. I say let this kind of thing prevail, and it will go on until it attacks banking and property of every other description, and until at last it attacks your charters.

Mr. Dresser Rogers said he must ask for one word of explanation. The worthy deputy had stated that the South Metropolitan Company was raised upon the ruins of a previous gas company. He had never heard such a statement before, although he had lived in the district for many years. The chairman of that company was present, and he should like to hear from him whether the statement was correct.

Mr. T. B. Simpson said, though he had been appealed to by the honourable member, he did not think it prudent, seeing the feeling of the court, to enter at all upon any part of the argument. At the same time he might be permitted to say that there had been misstatements on both sides. He was not now in a position to correct them, but certainly one statement which had been made was a very gross one.

Mr. Medwin said he hoped the court would not be drawn away from the real question at issue, and that in the present state of affairs they would not involve themselves in a crusade against the water companies. The corporation did not want their opposition in the House of Commons when seeking for a reform in the supply of gas, but that might probably be the effect of some of the statements which had been made. As a man of business, he could not look at the returns published in reference to the gas companies without coming to the conclusion that the Great Central had not acted fairly, if honestly, to the corporation. He found that although their capital last year was only £251,000, they had an income of £122,000, whereas the Western Company, with a capital of £303,000, had an income of some £31,000 less, out of which they were able to pay their dividends. The Western Company, with all the pressure of this additional capital, and with a smaller income, paid 20 per cent., while the Great Central paid only 10. The thing spoke for itself.

Mr. Rowe said he hoped the honourable member could support his statement that the Western Company paid 20 per cent. He certainly never heard that such was the case.

Mr. Medwin said he had the statement in print before him. The clerk of the Metropolitan Board laid the return before that body. He thought he could not have a better authority. He found that the Equitable Company had a capital of £33,000 more than the Great Central, while its income was 25,733 less, and yet they paid 15½ per cent. as against the 10 per cent. of the latter. And so it was all through the return. It was apparent, therefore, that the citizens were paying for bad management. If the Great Central chose to lose 25 per cent. of their gas through having bad pipes the public paid for that waste, for the company had no interest in securing a more economical working of their affairs. So long as they were guaranteed 10 per cent. the public would never have a fair return of what these companies were doing. He was told, and he thoroughly believed it, that the products of the distillation of coal yielded more to the company than the cost of the coal itself and the expense of the manufacture of gas, so that they got 8000 or 10,000 feet of gas out of a single ton of coal, which did not cost them a farthing. There was therefore only the cost of distribution, and he trusted this court would turn its attention to securing the distribution and would not themselves become manfacturers of gas. They would have a good plea in going before Parliament for such an object in the fact that the control of the streets ought not to be in the hands of speculative commercial companies, but should be in the hands of the municipal authorities. Let them ask Parliament to compel the companies to sell gas

to them at an agreed price, and deliver it into pipes laid down by the corporation. If they got that power they would have a dozen companies organized by independent parties, who would supply them with gas at 6d., or less than that per 1000 cubic feet. Indeed, he believed there was a company about to be organized for the burning of coal for commercial purposes, and throwing the gas away. The products were getting more valuable every day, and they would be glad to give them the gas for the sake of getting rid of it. In going to Parliament for power to lay down mains, no one could oppose the corporation, and they could then afford to supply gas at 2s. 6d. or 2s. per 1000, and realize something like £100,000 for the purpose of improving the City of London.

Mr. MAYNARD said it would be necessary, in going to Parliament for power to erect works, to state upon what site they intended to place them. He should like the court to be informed where the land was upon which the committee had fixed.

Mr. E. DRESSER ROGERS said they knew of two or three convenient sites, but he did not think it prudent to name them, as it would only tend to increase the value of the land.

The REMEMBRANCER being appealed to on the subject, said he thought it was very desirable that the answer should not be given before the public, and he would suggest that strangers be requested to withdraw.

Mr. H. L. TAYLOR said his friend need not press the question now, the information would be given at the proper time. The real question for consideration now was, whether the corporation were in earnest in placing themselves before Parliament to obtain an Act which should relieve the citizens from the enormous pressure put upon them by the coalition and combination—the unnatural combination of the three companies. Although he had been disinclined to meddle with the question, he now saw no help for it, if they would extricate the citizens from that iniquitous bill passed in 1860, by which they were placed, as it were, in a cleft stick, the companies being empowered to charge what they pleased, and the public having no means of helping themselves. He remembered that when the Great Central Company were introduced into the City in 1850 he was much opposed to them, for he believed at the time that as soon as they got a firm footing they would disregard all their promises, and make the best thing they could for themselves. His friend, Deputy Elliott, said he liked fair dealing in all the affairs of life. He (Mr. Taylor) wondered whether his friend bore in mind what was promised by and expected from the Great Central Company when they palmed themselves upon the citizens. What did they engage themselves to do if the citizens supported them? He found that at that time there was a deed of covenant entered into between them and the Commissioners of Sewers, acting for the citizens, to the effect—"That the gas to be supplied by the said company shall be exclusively gas superior, both in purity and illuminating power, to that in use on or about the time when the said original resolution was passed, and shall be supplied at a price never to exceed 4s. per 1000 cubic feet." How had they kept that covenant? As soon as ever they had an opportunity to raise the price they took advantage of it, and at the present time, ignoring this covenant altogether, they were charging 4s. 6d. They further promised that the price should "be reduced to 3s. 6d. and 3s. per 1000 cubic feet as soon as the consumption thereof will enable the company to make the reduction out of the excess of profits after paying their shareholders a dividend of £10 per cent. per annum." The citizens had never heard of this 3s. 6d. except in that deed. From the manner in which the Great Central, as well as the other two companies (a plague upon them all) had performed their obligations, he should be delighted to see the citizens freed from them, and enabled to get gas better in quality and lower in price. But if the corporation resolved upon the course recommended they must be in earnest; there must be no shillyshallying in the matter, because expenses would have to be incurred, and they must see to it that they get the best evidence in their power to lay before the committee of the House of Commons to sustain their case. He believed that though Parliament had passed a bill by which they gave districts to the three companies, they would not be unwilling to give the corporation an Act which would make them free from their control, and compel the companies to supply gas in competition with other parties.

After some remarks from Deputy FRY,

The amendment was put to the court, and carried by a very large majority; and, on being subsequently put as a substantive motion, it was similarly adopted, amidst loud cheers.

On the motion of Deputy BURNELL, it was resolved that the further proceedings in the matter be referred to a special committee, consisting of twelve members, seven to form a quorum.

A motion by Mr. LAWLEY to suspend any standing order which might operate to disqualifying any member nominated on such committee was also adopted.

After some discussion, the following gentlemen were appointed as members of the committee—Messrs. De Jersey, Medwin, Bontems, Sims, Haines, Rogers, Rudkin, Lusher, Macgeorge, Whiteside, F. Cox, and Gower; and it was resolved that the chairmen of the City Lands and of the Parliamentary Committees be *ex officio* members of the committee.

Mr. WHITESIDE moved that the petition of gas consumers of the City of London, praying the court to authorize the General Purposes Committee to engage professional assistance for obtaining the information necessary to enable them to apply to Parliament for powers to erect gas-works, and to manufacture or contract for the supply of gas, and to lay down new or purchase the existing mains for the distribution of gas to the citizens of London, be referred to the special committee just appointed; which having been agreed to, the court adjourned.

RESEARCHES ON THE VOLATILE HYDROCARBONS.

By C. M. WARREN.

[From the *Memoirs of the American Academy* and *Silliman's Journal*.]

(*Continued from page* 729.)

PART II.—*Hydrocarbons from Oil of Cumin and Cuminic Acid.*

The oil of cumin employed in this research was furnished by Messrs. Reed and Cutler, wholesale importers of drugs, &c., of Boston. The package bore the label of Eduard Büttner, manufacturer, of Leipzig, and purported to be a genuine preparation, answering in all of its obvious physical properties—odour, colour, &c.—the description given of this oil by Gerhardt and Cahours (*a*) in their original memoir on this substance, who, it appears, also employed a commercial preparation. Its behaviour in distillation left no doubt of its being a genuine article; and this was afterwards confirmed by treatment of the cuminole with fused potash, for the production of cuminic acid, its comportment with this reagent being in all respects identical with that described by Gerhardt and Cahours. Subjected to repeated series of fractionings by my process of fractional condensation already referred to, it gave, in addition to cymole and the residue of cuminole, a body boiling at about 155°, which so closely resembles oil of turpentine in odour, &c., as to be hardly distinguishable from the latter substance. The presence of this body may account for the very low boiling-point which Gerhardt and Cahours assigned to cymole—viz., 165°. The boiling-point of cymole was subsequently found by Gerhardt (*b*) to be 175°, but my own determination places it still lower by about 5°. It is evident, therefore, from a comparison of their own determinations, that the oil of cumin which they originally operated upon contained an oil boiling below cymole; and hence the finding of such an oil in that which I employed need not raise a doubt as to its being genuine. This lighter body is present in so small a quantity as hardly to admit of its being detected, or at least identified, by the old process of fractioning; and its detection and isolation by the new process is but another illustration of the superior excellence of this method.

1. OF THE BODY RESEMBLING OIL OF TURPENTINE.—Specific gravity, 0·8772 at 0°, and 0·8657 at 15°.

Determination of Boiling-point.—The quantity of material at command was too small to admit of attaining so high a degree of purity for this body as was desirable. The product obtained, however, distilled almost to dryness between 153°·4 and 155°·5. Taking the average of these observations, and applying the usual corrections, we obtain 155°·8 for the boiling-point of this body.

Analysis.—0·2575 gram of the substance gave, by combustion with oxyd of copper, 0·8283 of carbonic acid, and 0·2766 of water.

		Calculated.		Found.
Carbon,	C_{20}	120	88·24	87·73
Hydrogen,	H_{16}	16	11·76	11·94
		136	100·00	99·67

Determination of Vapour Density.—

Temperature of balance,	16°
Temperature of oil bath,	211°
Height of barometer,	758·4mm at 14°
Increment of balloon,	0·4929
Capacity of balloon,	221 c. c.
Density of vapour found,	4·7281
Theory, $C_{20}H_{16}$=4 volumes	4·7028
Excess found,	·0253

The calculated density on the formula $C_{14}H_{14}$ is 4·635; which, compared with the density found, would increase the excess to 0·093. Although the determination agrees more nearly, indeed almost exactly, with the calculated density on the formula $C_{20}H_{16}$, the calculation on the formula $C_{20}H_{14}$ does not show a greater variation from the density found than we have observed to be quite frequent with hydrocarbons of so high boiling-point; so that it may be questionable which of these formulæ is the true one. I cannot regard the determination of a vapour density as reliable for fixing the formula nearer than to within two equivalents of hydrogen. In the absence of opposing evidence, it will be wiser, however, to take the formula which agrees best with the results of experiment; at least until it shall be shown that the discrepancy between the calculated and observed vapour densities of bodies of high boiling-point, which appears to be so frequent, is nearly constant, or variable by some fixed law by which the amount of the error, in any given case, may be pretty nearly estimated. I shall, therefore, regard this body as having the formula $C_{20}H_{16}$, which is also better supported by the results of analysis. On account of its source, and close resemblance to oil of turpentine, I think of no better appellation for this body than cumo-oil of turpentine; thus adding another to the long list of isomers of the former substance, the chemical relations of which stand in so much need of being further studied.

2. CUMOLE.—This body was first obtained by Gerhardt and Cahours, (*c*) by the dry distillation of a mixture of six parts of crystallized cuminic acid, and twenty-four parts of caustic baryta. Abel (*d*) obtained the same result by substituting caustic lime for the baryta. His product, however, was found to boil at 4° above that of Gerhardt and Cahours. My preparation was also made by the use of lime. Although the results of my experiments confirm the conclusions arrived at by Gerhardt and Cahours as to the composition of this body, yet the numerical results differ considerably from theirs. I have also observed some new facts regarding the formation of this body. They have described the reaction between the baryta and cuminic acid as being much more simple than my experiments seem to indicate. On this point they remark: "The formation of cumene is easily explained. In effect, the cuminic acid being represented by $C_{10}H_{12}O_4$, it appears that C_4O_4, that is to say, two equivalents of carbonic acid, are retained by the baryta, while $C_{20}H_{12}$ are set free." (*e*)

$$C_{20}H_{12}O_4=C_2O_4+C_{18}H_{12}.$$

In another place (p. 88) they remark, that "by suitably managing the heat, and employing no more than 6 grains of cuminic acid at a time, no other products are ever obtained than those which we mention." (*f*) My experiments show that this reaction is by no means so simple as thus described. The crude product obtained from the mixture of lime and cuminic acid, when subjected to a simple distillation from a tabulated retort, was found to distil between 155° and 250°, leaving a residue at the latter temperature which became semi-fluid on cooling. The distillate thus obtained gave, by my process of fractional condensation, an oil boiling at 151°·1, and a residue at 170°. It is not improbable that the latter may prove to be mostly cymole, $C_{20}H_{14}$; but the quantity was too small to admit of pursuing this inquiry with the probability of deciding the question. There is evidence, however, that the product obtained by Gerhardt and Cahours was not simply pure cumole, as they described it, but a mixture of different bodies, which would necessitate a more complicated reaction than that which they assigned. Gerhardt and Cahours found the boiling-point of their cumole to be constant at 144°. Four years later, Gerhardt, (*g*) having occasion to make a very accurate determination of the boiling-point of this body, in connexion with his research to find a law governing the boiling-points of the hydrocarbons,

(*a*) *Annales de Chimie et de Physique*, 1841 [3], i., 60.

(*b*) *Ibid*, 1845 [3], iv., 111.

(*c*) *Annales de Chimie et de Physique*, 1845 [3], iv., 87.

(*d*) *Annalen der Chemie und Pharmacie*, 1847, lxiv., 312.

(*e*) "La formation du cumène s'explique aisément. En effet, l'acide cuminique étant représenté par $C_{10}H_{12}O_4$ on voit que C_4O_4, c'est-à-dire 2 equivalents d'acide carbonique sont retenus par la baryte, tandis que $C_{20}H_{24}$ sont dégagés."—*Annales de Chimie et de Physique*, 1841, [3], i., 89.

(*f*) "En dirigeant la chaleur convenablement et en n'employant pas plus de 6gr. d'acide cuminique à la fois, on n'obtient jamais d'autres produits que ceux que nous venons de nommer."

(*g*) *Annales de Chimie et de Physique*, 1845 [3], xiv., 107.

found its boiling-point to be 9° higher—viz., 163°, which is but 2° higher than my own determination. The disagreement between their determinations, it being so considerable, may be more reasonably accounted for on the supposition that they operated, in the first instance, upon a mixture of different bodies; and yet I cannot see how they could have obtained the product boiling below 150°. Additional evidence on this point will be found in the discrepancy which appears between their determination of the vapour density, and that calculated upon theory.

The specific gravity of my preparation of cumole was found to be 0·8792 at 0°, and 0·8675 at 15°.

Determination of Boiling-point.—The quantity of material being quite small, this determination was made in a large test-tube, with the usual precautions. It had not a perfectly constant boiling-point, the distillation ranging from 148°·4 to 151°·6. Applying the proper corrections to the mean of these observations, gives, for the boiling-point of cumole, 151°·1, which is doubtless a little too high from the impracticability of making a complete separation with the small quantity of material employed. If the boiling-point difference between cumole and cymole, for the difference of C_2H_2 in their elementary formulæ, is 30°, as there is every reason to believe, then the boiling-point of cumole should be 150°, as I have found the boiling-point of cymole to be but a fraction under 180°.

Analysis.—0·1700 gram of cumole gave, by combustion with oxyd of copper, 0·563 of carbonic acid, and 0·1557 of water.

		Calculated.		Found.
Carbon,	C_{18}	108	90·00	90·35
Hydrogen,	H_{12}	12	10·00	10·18
		120	100·00	100·53

Determination of Vapour Density.—

Temperature of balance,	17°
Temperature of oil bath,	203°
Height of barometer,	760·1mm at 15°
Increment of balloon,	0·4428
Capacity of balloon,	232 c. c.
Density of vapour found,	4·2003
Theory, $C_{18}H_{12}$=4 volumes,	4·151

This determination, as well as the results of analysis, confirms, therefore, the formula which Gerhardt and Cahours had assigned to this body. I had anticipated a different result from this, inasmuch as the hydrocarbon from coal-tar naphtha, which I have called *iso-cumole*, boiling at 170°, or nearly 20° higher than cumole from cuminic acid, had been found, as I have shown above, to have the formula $C_{18}H_{12}$. I am forced to the conclusion, therefore, that these two bodies are isomeric, and belong to different series. A preliminary examination of their behaviour with reagents indicates that their chemical properties are also different. These will be treated of on a future occasion, in Part III.

3. CYMOLE.—Notwithstanding that this body is so much more volatile than the cuminole with which it is associated in the oil of cumin—there being a difference of 40° between their boiling-points—Gerhardt and Cahours found it necessary to resort to chemical means, viz.: treatment with fused potash, in order to isolate it. Being desirous of testing the efficiency of my process in effecting the separation, the preparation employed in this investigation was obtained by fractional condensation, this process having been found as effective in this as in other cases. This will appear by a comparison of the results obtained in the study of this body before and after treatment with concentrated sulphuric acid, which is also effective to remove cuminole.

Specific gravity.—

At 0°,	before	treatment	with HO SO_3	0·8697
At 0°,	after	,,	,, ,,	0·8724
At 14°,	before	,,	,, ,,	0·8592

Determination of Boiling-point before Treatment with Sulphuric Acid.—The preparation was found to distil to dryness between 175°·8 and 177°. The temperature remained absolutely constant at 176° during the lapse of ten minutes, and occupied fifteen minutes in rising from 176° to 176°·5. Taking the mean of the former numbers, viz.: 176°·4, and applying the proper corrections for pressure, &c., we obtain 179°·5 for the boiling-point of cymole.

After Treatment with Sulphuric Acid.—The preparation distilled to dryness between 176° and 177°, the temperature remaining thirteen minutes constant at 176°·3, indicating that no essential change in the boiling-point had been produced by the acid treatment. It was nevertheless evident that some impurity was being removed by the acid, as the first portions of the latter became dark-coloured and thickened on being agitated with the oil. Successive portions of acid were therefore employed, until it ceased to produce any marked effect.

Analysis before Treatment with Sulphuric Acid.—0·1589 gram of cymole gave, by combustion in a stream of oxygen gas, 0·5200 of carbonic acid, and 0·1532 of water.

		Calculated.		Found.
Carbon,	C_{20}	120	89·55	89·25
Hydrogen	H_{14}	14	10·45	10·71
		134	100·00	99·96

After Treatment with Sulphuric Acid, and Distillation in Vacuo.—0·1623 gram of cymole, by combustion in a stream of oxygen gas, gave 0·5324 of carbonic acid, and 0·1561 of water.

		Calculated.		Found.
Carbon,	C_{20}	120	89·55	89·46
Hydrogen,	H_{14}	14	10·45	10·68
		134	100·00	100·14

The removal of impurity by treatment with sulphuric acid had therefore hardly a sensible effect on the results of analysis.

Determination of Vapour Density before Treatment with Sulphuric Acid.—

Temperature of balance,	11°
Temperature of oil bath,	259°
Height of barometer,	740·6mm at 5°
Increment of balloon,	0·4446
Capacity of balloon,	239 c. c.
Density of vapour found,	4·742
Theory, $C_{20}H_{14}$=4 volumes,	4·6351

After Treatment with Sulphuric Acid.—

Temperature of balance,	25°·5
Temperature of oil bath,	255°
Height of barometer,	760mm at 26°
Increment of balloon,	0·4647
Capacity of balloon,	232 c. c.
Density of vapour found,	4·7536
Ditto before treatment with HO SO_3	4·742
Difference,	·0116

The results of the two determinations are therefore almost identical.

A comparison of the above results with those obtained in the study of isocumole, the body from coal-tar naphtha boiling at 170°, will show that the two bodies are far from being the same substance, as Mansfield assumed, and that they have a constitutional difference of C_2H_2, and therefore doubtless belong to different series.

(*To be continued.*)

SALE OF GAS ACT.

CITY OF LONDON QUARTER SESSIONS.

At a Meeting of the Magistrates and Justices of the Peace for the City of London, assembled in Quarter Sessions, at Guildhall, on Saturday, the 21st inst.—the Right Hon. the LORD MAYOR in the chair,

The CLERK of the PEACE (Mr. Read) read the following report from the committee of magistrates appointed by the court to carry out the provisions of the Sale of Gas Act in the City of London:—

To Her Majesty's Justices of the Peace for the City of London, in Quarter Session assembled, on Saturday, the 21st day of October, 1865.

Whereas, at the Court of General Quarter Session holden for the City of London, on the 19th day of October, 1861, an order of reference was made to a committee of the whole court of justices for them further to carry out the Act of Parliament for regulating measures used in sales of gas.

Your committee, in pursuance of the said order of reference, report that, from the 12th of August, 1861 (the commencement of operations at the gas-office), up to, and inclusive of, the 24th day of September last, 175,485 meters have been tested, of which number, 6444 have been tested since the 24th day of June last (the date of the last return); and for these last-mentioned meters, fees amounting to the sum of £220. 4s. 6d. have been received, which said sum will be duly paid to the Chamberlain of London to the account of the Commissioners of Sewers.

Your committee further report that, in addition to the salaries already paid by the Commissioners of Sewers to the inspector and his assistants, the following expenses have been necessarily incurred in carrying out the requirements of the said Act:—

	£	s.	d.
Mr. Henry Hadron, accountant, keeping books at gas-office	65	0	0
Gas (Great Central Gas Company)	14	1	8
Mr. Gravatt, stationer, for sealing-wax, &c.	9	17	6
Mr. Westcott, builder, for repairs to testing-house	4	8	7
Inspector, petty cash	0	17	0

Your committee recommend that orders be made, in pursuance of the Statute, upon the Commissioners of Sewers for the payment of the several expenses incurred by them as aforesaid.

Dated this 20th day of Oct. 1865.

(Signed) SAMUEL WILSON, Chairman.

On the motion of Alderman WILSON, seconded by Alderman PHILLIPS, it was resolved that the report be approved and confirmed, and that orders be made upon the Commissioners of Sewers for payment of the several amount therein named.

At the Meeting of the Metropolitan Board of Works, held at the Offices, Spring Gardens, on Friday, 13th October, the annexed return, showing the number of gas-meters tested by each inspector, with the amount of fees received for the same, for the quarter ending 30th September, 1865, was presented:—

Weeks ending	Number of Meters.				Fees Received.			
	Mr. Airey.	Mr. Dethridge.	Mr. Mills.	Total.	White Lion St., Spitalfields.	Castle Street, Southwark.	St. Ann Street, Westminster.	Total.
1865.					£ s. d.	£ s. d.	£ s. d.	£ s. d.
July 8	82	120	180	382	2 17 0	3 19 6	9 4 0	16 0 6
15	270	128	322	720	8 15 0	3 2 0	10 16 6	22 13 6
22	306	89	258	653	8 10 0	3 4 0	9 2 0	20 16 0
29	354	133	160	647	10 7 0	4 15 6	5 17 6	21 0 0
August 5	410	110	214	734	14 1 6	4 2 6	12 1 6	30 5 6
12	275	142	286	703	8 5 6	4 14 6	7 1 0	20 1 0
19	270	259	200	729	12 16 0	7 1 0	7 15 6	27 12 6
26	390	153	300	843	13 4 6	8 3 6	12 19 0	34 7 0
Sept. 2	353	180	230	763	6 9 6	3 2 0	5 9 6	15 1 0
9	287	186	215	688	11 6 0	5 14 6	5 19 6	23 0 0
16	394	150	218	762	12 10 6	12 1 0	8 9 0	33 0 6
23	476	152	277	905	15 15 6	3 3 0	7 19 6	26 18 0
30	378	177	147	702	9 13 0	5 17 6	6 12 0	22 2 6
Total of 3 months	4245	1979	3007	9231	134 11 0	69 0 6	109 6 6	312 19 0

(Signed) E. CRESY.

EXPLOSION OF GAS AT ALL SAINTS CHURCH, NOTTINGHAM.—A very serious explosion of gas took place at the church of All Saints, Nottingham, in the afternoon of Thursday, the 19th inst. During the morning workmen were employed in repairing the damage done by the lightning on the previous day, and whilst at work the gas was lighted at the west end of the building for about two hours, after which it was turned off at the meter. About four o'clock a strong smell of gas pervaded the church, and the sexton informed the clerk of the works, who sent for a plumber to examine the place. After a short time the gas seemed to clear off, and all appeared to be right, no defect being found in the pipes. A light was procured in order to test them, and no sooner was it applied to the opening under the floor than the gas which had accumulated was drawn to it, and, igniting, went off with two terrific reports. The whole of the south aisle floor and seats were blown up, fragments of which striking the roof dislodged a quantity of tiles, and did other damage. Two of the west end windows were also blown completely out, and the organ sustained considerable damage. The sexton's wife was struck on the back by a piece of wood, but not seriously injured.

PUBLIC LIGHTING IN DUBLIN.

At a Special Meeting of the Council, held on Monday, the 23rd inst.—the LORD MAYOR in the chair—the TOWN CLERK read the report of Committee No. 1, recommending the acceptance of the tender of the Alliance Gas Company for the public lighting of the city on the terms contained in the report.

Mr. BYRNE moved the adoption of the report, which, he said, had reference to one of the most important matters which could engage the attention of the council. For the last few years the corporation had been paying a very high price for gas, so much as £3. 12s. 6d. per lamp per annum, for 12-candle gas illuminating power. These gas contracts had occupied the attention of the council for several years, and they thought it advisable to obtain gas of greater illuminating power than that which the existing companies were willing to supply, and it was not until the starting of the Commercial Gas Company that they were able to bring any pressure whatever to bear on the two existing companies. However, the contest in Parliament of last year opened the eyes of all concerned, and rendered the several gas companies more accessible to reason. For that result they were very much indebted to the Commercial Gas Company. Previous to that contest there was a very general opinion that the two existing companies were going in double harness, and at exactly the same pace. They found that the corporation were in earnest, and that they were not intended to be behind other towns in the United Kingdom as regards public lighting. Committee No. 1 of the corporation placed themselves in communication with the two existing companies and the prospective company, and a specification on gas, one of the fullest documents that ever issued from the corporation, was sent to the three companies. Instead of being content with 12-candle gas, all the companies assented that in future the illuminating power should not be less than 16, and the Commercial Company undertook to supply 20-candle gas, but the Commercial Gas Company had not parliamentary powers, and the tender which they forwarded, he should say, was rather ambiguous. The Alliance Gas Company tendered for the supply of gas at 3s. 11d. per 1000 cubic feet, including everything except lighting, extinguishing, and cleansing. In the specification four or five varieties of contract were set out. The first was for the supply of 16-candle gas, the company supplying lamps and other matters, as at present supplied by the Hibernian Gas Company. The second was for the supply of everything except the cleansing, lighting, and extinguishing. The third was for so much per 1000 cubic feet, the corporation cleansing, lighting, and extinguishing. There was another for the average meter system, the consumption of each lamp per annum being calculated by the amount burned by every twelfth lamp. This last proposition was the one most in favour of the corporation, and that was the form of contract which they recommended, the company to furnish everything with the exception of the cleansing, lighting, and extinguishing. The saving would, perhaps, be £1000 a year over the sum mentioned in the report of the committee. If proper care were taken in the lighting and extinguishing, the lanterns could be made in such a form as that this could be done by a man with a pole, and obviate the necessity of carrying a ladder. In this way three times as much could be done in lighting and extinguishing as by the present system. The Hibernian Gas Company always alleged that their contract was a bad and losing one. Their charge was £3. 12s. 6d. per lamp per annum, under a contract for three years, and £3. 7s. 6d. per lamp under a contract for ten years. That was for 12-candle gas. Now they would have 16-candle gas at a price under £3. 3s. per lamp per year. He would, therefore, maintain that by this contract they had effected a large saving in the public lighting, but besides this they will have provided the consumer with an article 33 per cent. better. This saving will be more than equivalent to the sum which the consumer pays in the public rates for the public lighting. In order to show the council the safe measures which they had taken for the purpose of securing good light, he would read the fifth clause of the specification, which was as follows:—"The gas supplied to the public lamps shall be of such illuminating power as to produce at a distance of not less than 1000 yards from the gas-works, from an Argand burner, with 15 holes and 7-inch chimney, and consuming 5 cubic feet of gas an hour—a light at least equal in intensity to the light produced by 16 uncased sperm candles of six to the pound—each burning 120 grains an hour, and such gas shall be so far free from sulphuretted hydrogen as not to discolour moistened test-paper imbued with acetate or carbonate of lead, when such test-paper is exposed for one minute to a current of gas issuing under a pressure of five-tenths of an inch of water, and shall not contain more than 20 grains of sulphur, nor more than 5 grains of ammonia in 100 cubic feet of gas." The Hibernian Company had their gas tested at the gas-works, but it was ascertained that gas lost at least one candle in illuminating power when it passed more than 1000 yards from the works. Mr. Byrne then read the following clause of the specification:—"For the purpose of enabling the corporation from time to time to ascertain the illuminating power and purity of the gas supplied to the public lamps, they are to keep, as at present in the City Hall, or some other convenient place or places, an experimental meter and photometer, furnished with a burner of the description specified in clause No. 5 of this contract, and any other apparatus necessary for testing the illuminating power and purity of the gas, and in the event of the illuminating power and purity of the gas supplied by the company not, when so tested, being equal to the illuminating power and purity by this contract prescribed, then the company shall forfeit such sum not exceeding £20, as the aforesaid committee may determine; and, in addition to such penalty, a further sum of £20 for every day the gas remains so defective." This was as good a contract as it was possible for the corporation to get. In relation to the 20-candle gas, the corporation had entered into an agreement with the Alliance Gas Company to the effect that the company should supplement their tender by an undertaking to supply gas of any greater illuminating power such as Parliament might fix at any time hereafter for Dublin, at an increased price proportionate to the price of 16-candle gas, at 3s. 11d. per 1000 cubic feet; such undertaking to be satisfactory to the law agent of the committee. He maintained that, from this contract, a benefit to the consumer of 33 per cent. would be gained, and that the private consumer would be benefited to the same extent. The corporation deserved the greatest credit for what they had done in the matter, in which he would say they had not betrayed the trust reposed in them by the public.

Mr. DEVITT seconded the adoption of the report, and in doing so said that Mr. Byrne appeared to forget that, when the committee had last year a consultation with Mr. Sanders, of the Hibernian Gas Company, and Mr. Stevenson, of the Alliance Gas Company, Mr. Stevenson did all he could to urge on Mr. Sanders the propriety of tendering for 15-candle gas. He (Mr. Devitt) believed that there was not the slightest concert or combination between these two companies in their tender for the supply of gas. He was glad to find his friends of the Alliance Gas Company were the successful competitors, for the competition took place without favour being shown to any party. He wished, as a member of No. 1 Committee, to express, on his own part and on that of the committee, their sincere thanks to their gas inspector, Mr. Cotton, for the immense assistance which he afforded to that committee throughout the negotiations in reference to this contract. It was he who drew out the original specification which formed the groundwork of the committee's work, and which was effectually submitted to the gas companies. He (Mr. Devitt) was glad that the Alliance Company had obtained this tender, and he hoped it would be a profitable one. That was a native company, and it belonged to themselves—its directors belonged to themselves. The saving which the corporation would effect by this contract would amount to close on £3000 a year. The corporation were also the means of obtaining for private consumers 33 per cent. better light than they had before. He hoped that Parliament would fix a higher rate of gas than 16-candle gas, and concluded by again expressing his deep obligations to Mr. Cotton for the able assistance which he had rendered to the committee.

Mr. WHELAN charged the committee with not providing the safeguard of meters for the public lamps under the control of the corporation. He also complained that care was not taken to ensure the purity of the gas by making the Alliance Company agree to extract the gas from coal of which a certain per centage should be cannel.

Mr. SULLIVAN said the committee provided for meters to the lamps. The Alliance Company were bound by stringent terms to supply gas of a certain purity, and whether the gas was made of cannel coal or of shoe leather did not matter so long as the citizens got good gas. No. 1 Committee has certainly done good work. A great reform in the lighting of the city was secured. The lamps would show 16 instead of 12 candle gas—an improvement which the citizens would appreciate. He was glad, too, that the Alliance Company's tender had been accepted.

Alderman REYNOLDS congratulated the committee and the council on the result of their exertions to effect an improved lighting of the city. The illuminating power of the lamps would be increased 33 per cent. By the last Improvement Act the council obtained power to contract for the lighting for ten years instead of three years. It was this power that enabled the Alliance Company to make the very favourable tender that had been accepted. The citizens were under an obligation to the committee and the council for the reform in the public lighting that would be effected.

The LORD MAYOR said the experiments so ably conducted by Sir John Gray, and also by Mr. Neville, Mr. Byrne, and Mr. Cotton, showed that gas of a much higher illuminating power than the city then got ought to be supplied. It was at first denied that the improved gas could be supplied, but when the Commercial Gas Company, with which he had a connexion, was formed, a great change in opinion was the result. The Commercial Gas Company was established for the public good. It was to improve the lighting of the city and of Kingstown, and one of the effects of its establishment was the very favourable contract with the Alliance Company which the committee recommended for confirmation.

The report was then unanimously adopted.

ANALYSIS OF THE METROPOLITAN WATERS IN OCTOBER, 1865, BY PROFESSOR FRANKLAND, F.R.S., OF THE ROYAL COLLEGE OF CHEMISTRY:—

Names of Water Companies.	Solid Matter in 100,000 parts of the Waters.	Organic and other Volatile Matter.	Amount of Oxygen required for oxidation of Organic Matter.	Degrees of Hardness.		
				Permanent.	Temporary.	Total.
Thames Water Companies.						
Chelsea	23·67	0·72	·0384	4·5	12·0	16·5
West Middlesex	24·16	0·97	·0304	4·4	12·7	17·1
Southwark and Vauxhall	18·78	0·84	·0416	3·5	12·9	16·4
Grand Junction	24·56	0·81	·0400	4·2	12·2	16·4
Lambeth	25·26	1·34	·0720	3·7	13·7	17·4
Other Companies.						
Kent	34·92	1·74	·0048	7·8	15·9	23·7
New River	19·40	0·77	·0096	3·4	13·8	17·2
East London	24·32	0·86	·0240	4·0	13·4	17·4
South Essex	37·68	0·84	·0048	6·1	15·0	21·1

The table may be read thus—100,000 lbs. of the Chelsea water contained 23·67 lbs' of solid matter, of which 0·72 lbs. of organic and other matters were driven off by incineration. ·0384 lbs. of oxygen were required to destroy organic matter in the said quantity of Chelsea water. Of the solid matter 16·5 lbs. are carbonate of lime or its equivalent; of which 12 lbs. are got rid of by boiling.

The second column of this table contains the amount of solid matter left on evaporation and desiccation at 110°—115° C. (230°—240° F.). The results are recorded in 100,000 parts. By moving the decimal point one place to the right, the above figures express in milligrams the quantities contained in one kilogram of the several waters.

OLEAGINOUS MINERAL.—The discovery in this colony (New South Wales) of mineral shale producing kerosene oil is likely to prove of importance. If we have not oil-springs, and may even never be able to find them, we have, in abundance, the material out of which oil can be manufactured. The oil can be extracted cheaply, and the process at the present price leaves a large margin of profit. We have here a new industry which is capable of indefinite expansion. The consumption of kerosene oil in these colonies is very large, and is constantly increasing, and even when we have supplied our local demands, we shall have a foreign market in the east which is easily accessible. In addition to the oil, there is a demand for the mineral itself. It is found to be very valuable for the production of gas. Some of it has been experimented on at our own gas-works, and some at Melbourne. An order has been received, too, to send a consignment for trial at the gas-works at Singapore. At present, no locally-manufactured kerosene oil has been brought into the market. All that has been done has been on an experimental scale. But these experiments are so conclusive that capital is being freely adventured in the enterprise. Machinery is being set up for distilling the oil, and before very long the first supplies may be expected in the market. The principal deposit at present discovered is near Hartley, in the valley of the Lett, and within a few miles of the line traced for the Great Western Railway. It is very similar in character to the Boghead mineral of Scotland, but of a superior quality, and the seam is a very fine one. It has yet to be ascertained how far it extends, and at what points it may be conveniently accessible, but several parties are examining the country, and its mineral resources will soon be better known. It is curious to note how possible wealth may long remain neglected. The existence of the petroleum mineral at Hartley has been known for years, fragments of it lying on the surface of the ground; but its identity with the Boghead coal had never been shown, and but for the great American discoveries it might possibly have remained long neglected. However its virtues will be tested now.—*Sydney Herald.*

THE SUPPLY OF GAS IN CANTERBURY.—The grievances so long endured by the gas consumers of Canterbury, and for which they hoped a remedy had been found, still exists, and in as disagreeable and perplexing a form as ever. When the recent agitation took place, resulting in a determination to form a "gas consumers company," such proposals were made by the directors of the existing company as induced the supporters of the new scheme to withdraw from it. The company, however, have failed to carry out what was stipulated for—a larger supply of gas, of better quality, and withal at a cheaper rate. It was only a few weeks ago that the superintendent of police directed the attention of the magistrates to the fact that numbers of the public lamps were totally extinguished at night from an insufficient supply of gas, and a communication was directed to be forwarded to the directors of the gas company acquainting them of it. The matter complained of by Mr. Davies, however, appears only to have been a slight specimen of what was to follow, for since that time whole streets have been in total darkness, and shopkeepers and private residents in many parts of the town compelled to obtain other light than the miserable apology provided by the present gas company. In fact, a worse state of things now exists than at the period of the agitation on the subject. It is quite true that something has been done by the gas company in accordance with their pledge, but inasmuch as no half measures were accepted by those who very properly exerted themselves in order to remedy the existing evil, a persistent determination should be come to, to have the agreement carried out in its entirety, or to revive the scheme for establishing a new company.—*South-Eastern Gazette.*

QUALITY OF THE GLASGOW WATER.—An analysis of the water supplied to Glasgow for domestic purposes was published last week by Thomas Anderson, Esq., Glasgow University. In that city they are using a daily average of 21,738,227 gallons from Loch Katrine, and 3,631,744 gallons from the Gorbals Water-Works, making a total consumption of 25,369,971 gallons per day. The analysis of these waters gave the following results, calculated on 100·000 parts :—

	Loch Katrine.	Gorbals.
Total solids	3·143	8·513
Fixed salts dried at 240 degrees	1·772	6·456
Volatile matters	1·371	2·057
Oxygen required for the oxidation of the organic matters	0·100	0·264
Hardness	0·87	3·75

For the more complete illustration of the nature of the Loch Katrine water a more minute analysis is added, giving the amount of each of its individual constituents in 100·000 parts :—

Peroxide of iron	0·343
Lime	0·731
Magnesia	0·219
Potash	0·043
Soda	0·320
Chloride of sodium	0·017
Sulphuric acid	0·660
Phosphoric acid	Trace
Carbonic acid	0·562
Silicic acid	0·176
Organic matter	0·071

Share List of Metropolitan Gas Companies.

No. of Shares issued.	Amount per share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum	Price per Share.
	£		£ s d	£ s d	£ s d
5000	10	Anglo-Romano	10 0 0	10 0 0	10 to 12
5000	20	Bahia (Limited)	20 0 0	£5 intr.	17 to 17½
1000	20	Do., preference	20 0 0	10 0 0	28 0 0
750	20	Do., do., redeem.	10 0 0	10 0 0	12 to 13
20000	5	Bombay (Limited)	5 0 0	£5 intr.	5¼ to 5⅝
10000	5	Do., second issue	5 0 0	£5 intr.	5⅜ to 5⅝
10000	5	Do., third issue	2 0 0	£5 intr.	2⅛ to 2⅜
5000	20	Brit. Provincial L.	20 0 0	7 10 0	29½ to 30⅜
8200	20	Do., new (Norwich, Hull-Sculcoates, Shelton Potteries, Trowbridge, & Holywell.)	20 0 0	7 0 0	27 to 27½
12000	50	*Chartered*	50 0 0	10 0 0	76 to 78
6000	50	Do.	30 0 0	10 0 0	45½ to 46
10000	20	*C. of London*, Ash.	20 0 0	10 0 0	30½ to 30⅜
10000	10	Do., B shares	10 0 0	4 0 0	7 5 0
8000	10	Do., new shares	10 0 0	10 0 0	15 to 16
35000	25	City of Moscow (L) Colonial & General	5 0 0	£7 intr.	3¼ to 3⅜
17490	25	*Commercial*	25 0 0	10 0 0	41½ to 42
5000	20	Continental G. & W.	6 0 0	6 0 0	
2500	20	Continental Union	20 0 0	8 0 0	19 to 20
17500	20	Do.	10 0 0	8 0 0	10½ to 10⅝
5827	5	County & Gen. (L)	5 0 0		
2000	5	Do., preference (Pater, Pembroke, Ely, Lea Bridge, Northfleet, Walton, & Ware.)	5 0 0	6 0 0	
5000	10	*Crystal Pal. Dist.*	10 0 0	10 0 0	17 to 17½
5000	10	Do., preference	10 0 0	6 0 0	12½ to 13
4000	50	*Equitable*	50 0 0	10 0 0	79½ to 80
4000	25	Do., new shares	21 0 0	10 0 0	36 to 37
23406	10	European (Lim.)	10 0 0	10 0 0	13½ to 13⅝
12000	10	Do., new shares (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	10 0 0	6 12 6
20000	10	*Great Central Gas Consumers*	10 0 0	10 0 0	16½ to 16⅝
5000	10	Hong Kong (Lim.)	10 0 0		11 to 12½
26000	50	*Imperial*, old sh.	50 0 0	10 0 0	82 0 0
1300	100	Do., bonds	£100	10 0 0	197 to 198
7000	25	Imperial Austrian	10 0 0		
28000	50	*Impl. Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwp., Bordeaux, Brussels, Cologne, Frankfort-on-M., Haarlem, Stolberg, Toulouse, & Vienna	43 15 0	16 0 0	93¼ to 93½
3000	40	*Independent*	40 0 0	10 0 0	65 to 70
3000	10	Do.	10 0 0	5 0 0	8 to 9
3000	20	Do.	10 0 0	7 10 0	11 to 13
6886	50	*London*	50 0 0	10 0 0	78½ to 79
5519	25	Do., 1st pref.	25 0 0	6 0 0	29 to 29½
568	50	Do., 2nd pref.	50 0 0	6 0 0	
219	50	Do., 3rd pref.	50 0 0	6 0 0	
18781		Do., 1st pref. sk		6 0 0	
11828		Do., 2nd pref. sk		5 0 0	
12000	5	Malta & Medit. (L.)	5 0 0	2 10 0	
30000	5	Oriental, Calcutta	5 0 0	8 0 0	5⅜ to 6
30000	5	Do., new shares	1 0 0	8 0 0	1 to 1⅛
10000	5	Ottoman (Limited)	5 0 0		3½ to 4
10000	10	Parà (Limited)	10 0 0	£5 intr.	10½ to 11
27000	20	*Phœnix*	20 0 0	10 0 0	32 to 34
3600	100	Do., new	10 0 0	7 10 0	14 to 16
144000	Sk.	Do. (capit. profits)		5 0 0	
5000	20	*Ratcliff*	20 0 0	10 0 0	32 to 34
4138	5	Rio de Janeiro (L.)	20 0 0		20 to 20¼
2000	5	Singapore (Lim.)	5 0 0		
		Do., preference	5 0 0	7 10 0	
4000	50	Shanghai			
15000	10	*Sth. Metropolitan*	50 0 0	10 0 0	81 to 83
10000	10	*Surrey Consumers*	10 0 0	10 0 0	15⅞ to 16
9000	50	Do., new	4 0 0	10 0 0	7 10 0
1000C	10	United General (Dublin & Limerick)	50 0 0	4 12 0	32 to 34
1500	10	*Victoria Docks*			
1500	10	*Wandsworth & Putney*	10 0 0	7 10 0	
20000	10	Do., new shares		7 10 0	
		Western (Limited A shares	10 0 0	10 0 0	16¾ to 16⅞
10000	10	Do., B shares	5 0 0	10 0 0	9 to 9¼
10000	10	Do., C shares	3 0 0	10 0 0	6 to 6⅛
8000	5	*West Ham*	5 0 0	7 10 0	6 10 0
6000	5	Do., new shares	3 0 0	7 10 0	3 18 0
551	10	West London Junction (Lim.)	10 0 0	6 0 0	
520	10	Do., preference	10 0 0	6 0 0	

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1¼ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lb

Retail Prices are 5 to 10 per cent. higher.

	London.	Glasgow.	Newcastle	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Pig Iron, No. 1, G.M.B.	3 17 6	2 18 6	2 16 0	3 5 0	3 15 0
1¼ and 2-inch Socket-pipes	7 10 0	6 0 0	6 15 0	6 15 0	7 10 0
2½ and 3-inch ditto	7 0 0	6 0 0	6 5 0	6 10 0	7 0 0
4 and 5-inch ditto	6 10 0	5 10 0	5 15 0	6 0 0	6 10 0
6 inches and upwards ditto	6 5 0	5 0 0	5 10 0	5 15 0	6 5 0
Retorts, 1st fusion, hot blast	6 0 0	—	5 5 0	5 10 0	6 0 0
Ditto, 2nd ditto, cold ditto	7 0 0	5 15 0	5 15 0	6 0 0	7 0 0
Tank-plates, ¼ thick and above	6 10 0	5 10 0	5 10 0	5 15 0	6 5 0

WROUGHT IRON TUBING,

Subject to 50 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 12 feet—per foot		1 0	0 10	0 7	0 5	0 4½
Ditto ditto, from 6 inches to 18 inches—each	3 0	2 0	1 9	1 3	1 0	0 9
Connecting-pieces, or Long Screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, Springs, and Elbows (wrought iron)	3 9	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, ditto	4 6	3 0	2 6	2 0	1 6	1 2
Iron Cocks	17 6	9 6	7 6	4 6	3 3	2 6
Ditto, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Nipples	1 3	0 9	0 8	0 6	0 5	0 4
Plain Sockets	1 0	0 8	0 7	0 5	0 4	0 3
Syphons, 2-quart	15 0	14 0	13 6	13 0	12 0	—

GAS COALS.—*Per Ton.*

Newcastle.—Unscreened :—

Brancepeth, Burnhope, East Castle, Haswells, Lanchester's Pelaw, Nettlesworth Primrose, and South Pelaw	6s. 6d.
Dean's Primrose, Felling, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	6 9
Craghead, Charlaw, Derwent, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lumbton's Gas, Medomsley, Mickley, New Pelaw, New Pelton, Pelaw Main, Ravensworth, South Moor Pelton, South Leverson, Townley Main, Tyne Main, Washington Hutton, West Pelaw, Wearmouth Hutton, and Witton	7 0
Peareth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	7 3
Pelton, South Peareth, Stella, Urpeth, and West Leverson	7 6

Scotch Cannel :—

Boghead (at Leith)	45 0
Kirkness, best	23 0
Capeldrae, 1st quality	20 0
Ditto, 2nd ditto	12 6
Lesmahago (at Glasgow)	24 6
Ditto (at Granton)	25 6
Arniston	27 6
Wemyss	20 0
Haywood, Wilsontown (at Granton)	14 0
Pirnie	14 0
Lothian's Cannel (free on board at Leith)	25 0
Myles' Cannel	21 0

FREIGHTS.

Coastwise—Newcastle.—Per Ton :—

Chatham and Rochester	7s. 9d
Cork	10s. 6d. to 10 6
Dover, Folkestone, and Ramsgate	7 9
Dublin	10s. 6d. to 11 0
Exeter Quay	10s. 0d. to 10 6
Ipswich	6 9
London (from Leith)	9 6
London (Pool)	7s. 9d. to 8 0
Lowestoft and Yarmouth	8 6
Portsmouth and Southampton	9 6
Plymouth	9s. 6d. to 10 6
Shoreham	8 6
Whitstable	8 3
Weymouth	10 0

Foreign.—Per Keel :—

Barcelona	24 0
Bordeaux	16 0
Boulogne and Calais	9 10
Cadiz	£16. 10s. to 17 0
Copenhagen	£9. 10s. to 10 0
Genoa	23 0
Hamburg	£11 to 11 10
Havre de Grace	£11 to 11 10
Leghorn	23 0
Lisbon	£16. 10s. to 17 0
Rotterdam	£10. 10s. to 11 0
Stettin	10 10
Trieste	20 0
Venice	24 0

SUNDRIES.

Best Nstle. Fire-bks., p. 1000, £2. 10s. to £2	15 0
Cliff's Fire-bks. (at Wortley), p. 1000.	2 15 0
Ingham's ditto (at Wortley), p. 1000.	2 15 0
Fire-clay Retorts, p. ft. run, 8s. 6d. to	0 7 0
Tough Cake Copper, p. ton	85 0 0
English Pig Lead, p. ton	21 5 0
Welsh Bar Iron (in London), p. ton	7 15 0
Foreign Spelter, p. ton	20 15 0
English Block Tin, p. ton	97 0 0
Banca, p. ton	96 0 0
Tarred Rope Yarn, p. cwt.	1 0 0

DR. WHITMORE'S REPORT ON THE QUALITY OF THE WATER SUPPLIED IN ST. MARYLEBONE, IN AUGUST AND SEPTEMBER, 1865:—

AUGUST.	Total Solid Matter in degrees or grains per Imperial gallon.		Organic Matter in degrees or grains per Imperial gallon.		Ammonia.
	Aug., 1864.	Aug., 1865.	Aug., 1864.	Aug., 1865.	
Distilled Water . . .	0°	0°	0°	0°	0°
West Middlesex water	....	15·04	....	2·56	
Grand Junction water	....	16·02	....	2·80	
Pump, Allsop Place .	....	97·28	....	14·96	Nitric Acid.
	Nov., 1864.		Nov., 1864.		
Pump, Chapel Place .	75·84	75·96	8·44	6·56	·424
SEPTEMBER.	Sept. 1864.	Sept. 1865.	Sept. 1864.	Sept. 1865.	
Distilled Water . . .	0°	0°	0°	0°	0°
West Middlesex water	....	15·65	....	1·20	
Grand Junction water	....	16·00	....	1·28	
Pump, New Cavendish Street	....	24·02	....	6·72	3·392
	May, 1865.		May, 1865.		
Pump, Riding House St.	68·16	69·80	5·20	4·96	·424

The diminished quantity of organic matter contained in the water supplied to the parish by the Thames companies during the past month, as compared with that of the month previous, has been very considerable, and shows a state of purity highly satisfactory; this in a great measure is due to the long continuance of dry weather. Should rainy weather set in, large quantities of decayed and decaying vegetable matter will be washed into the river, and the consequence will be, that the vegetable organic matter held in solution will be increased. During the vestry recess, I have found it necessary to remove the handles from the pumps in Allsop Place and New Cavendish Street; the water from the former having showed a large amount of organic impurity, and from the latter a very excessive quantity of ammonia. With regard to the latter, its highly offensive odour and taste proved that it was strongly impregnated with sewage. A careful examination of these wells is now being made under the superintendence of the assistant surveyor.

DR. WHITMORE'S REPORT ON THE QUALITY OF THE GAS SUPPLIED IN ST. MARYLEBONE, IN AUGUST AND SEPTEMBER, 1865:—

AUGUST.	Illuminating Power in Sperm Candles.			Mean Pressure in 10ths of an inch.	
	*Mean of 24 Observations.	Highest.	Lowest.	Highest.	Lowest.
Imperial Company's gas	14·08	14·95	12·95	20·74	8·32
Chartered Co.'s common gas . .	12·78	13·74	12·00	29·51	12·77
Chartered Co.'s cannel gas . . .	21·48	23·69	20·10	29·16	12·42
SEPTEMBER.					
Imperial Company's gas	14·20	15·16	13·00	22·30	8·52
Chartered Co.'s common gas . .	12·48	13·31	12·03	28·88	12·26
Chartered Co.'s cannel gas . . .	21·72	23·58	20·41	28·82	12·91

* Each observation consists of 10 readings of the photometer.

The results of daily experiments show that on no occasion during the past two months has either of the three gases consumed in the parish been, in respect of its illuminating power, below the parliamentary standard. The average intensity of light maintained by the Imperial Company's gas has been fully 17 per cent. above it, equivalent to rather more than the light of two extra candles; that of the common gas supplied by the Chartered Company has been rather more than 5 per cent. in excess, whilst their cannel gas shows an average increase of 8 per cent., or a surplus light of something over a candle and a half. It will also be observed, by reference to the tables, that the main pressure of all has been satisfactory, the highest prevailing at the period of the evening when the consumption is greatest, and continuing so until towards midnight. As regards purity, on no occasion has sulphur been found to exceed, or even reach, the quantity permitted by law. Sulphuretted hydrogen has been invariably absent, but ammonia constantly found in all, varying at times from a mere trace to a rather large amount.

Advertisements.

GEORGE GLOVER & CO.'S
IMPROVED DRY GAS-METERS,
STANDARD GASHOLDERS, AND TESTING APPARATUS.

Extensive experience, in this country and abroad, has proved the superiority of their Improved Dry Gas-Meters, which have come more rapidly into general use than any Meter hitherto manufactured.—The printed Report of the official Inspector of Gas-Meters for the City of Manchester, for the year ending 1863, shows that he tested 5707 *new Dry* Gas-Meters, and only 5 *new Wet* Meters; and that *George Glover and Co.'s Improved Dry Gas-Meters stand highest in point of accuracy*, as shown in the following extract:—

" George Glover and Co., per centage of error on the number tested, 2·116.
Thomas Glover " " " 2·812.
Croll, Rait, and Co. " " " 5·540.
Thomas Fletcher " " " 15·121.
Joseph Boulton " " " 25·000."

Ranelagh Works, Ranelagh Road (near Pimlico Pier), London, S.W.; and 15, Market Street, Manchester.

THE
GAS-METER COMPANY, LIMITED,
(LATE CROLL, RAIT, & CO.,)

Beg to intimate that the printed report of the official inspector of Gas-Meters for the City of Manchester for the year ending **1864** shows the following comparison:—

NEW METERS TESTED.

Of the Gas-Meter Company, Limited . .	Dry . .	1116	
	Wet* . .	1292	
Total		——	**2408**
Of George Glover and Co.	Dry	383	

* The Unvarying Water-Line Gas-Meter, in regard to which the following extract from said report refers:—"The visiting justices will perceive, from a comparison of the tables now appended with those of last year (viz., 1863), *that there has been a large increase in the number of new wet meters tested, owing to the Gas Committee having substituted the wet for the dry in the case of hired meters.*"

Extract from printed report of the said official inspector for the year ending 1862, shows the following comparison:—

Croll, Rait, and Co., per centage of error on the number tested . . 8·671
George Glover and Co. " " " . . 22·727

JOSEPH BOULTON,

PATENT DRY & IMPROVED WET GAS-METER MANUFACTURER,

80, KING'S CROSS ROAD, AND 10½, GREAT PERCY STREET,

CLERKENWELL, LONDON,

Begs respectfully to call the attention of the London and Provincial Gas Companies to an attempt which is being made by Messrs. George Glover and Co., Ranelagh Works, Ranelagh Road, Pimlico, to depreciate his Meter and those of other makers, by the publication of an extract from the Official Report of the Manchester Meter Tester for the year ending 1863, from which they wish it to be understood that the dry meter has obtained so prominent a position in Manchester that the wet meter is entirely excluded, thereby misleading the public; the fact, however, being that in the year 1864, the Gas Committee of that city passed a resolution against dry meters altogether, and have reverted to the exclusive use of wet meters. This proves the assertion as regards the use of dry meters in Manchester, given out by them at the present time, to be inaccurate; to confirm which, as well as to prevent the public from being misled in reference to the meaning of "per centage of error," Joseph Boulton directs attention to the following letter:—

GAS-METER TESTING OFFICE, *Bootle Street, Manchester, September* 16, 1864.

MR. J. BOULTON.

Dear Sir,—I am in receipt of your favour of the 15th inst., calling my attention to a Circular issued by Messrs. George Glover and Co., and based upon returns given in my last Report, 1863, wherein the per centage of error is mentioned. I am exceedingly sorry that those returns should have been used to the prejudice of your interest, or any other maker of meters, by Messrs. George Glover and Co., merely because they stand at the minimum per centage of error. These returns were compiled, by request, for the information of the Justices and Town Council of Manchester only, and not for the purpose of allowing any one maker to advertise by it, to the disadvantage of another.

With regard to your dry meter, I can testify to its being equal to any that are at present in the market for excellence of workmanship and material, and reliability of registration, and this I speak from my own experience of your meter prior to my present appointment, and also from subsequent knowledge as inspector; and I beg to assure you that the per centage of error as shown against your meter, or any other maker, *does not, in my opinion*, reflect in the least upon the merits of such meters as regards their construction, durability, and correct indication, but merely refers to the adjusting of the measuring capacity to the limit of range of 5 per cent., as per Act.

I append to this letter an extract from my last Report, which will convince you that I do not draw the same inference from the results as the firm named. I may here mention that the Gas Committee of this city have again reverted to the exclusive use of wet meters.

I am, dear Sir, yours faithfully,

(Signed) JAMES URQUHART, *Inspector.*

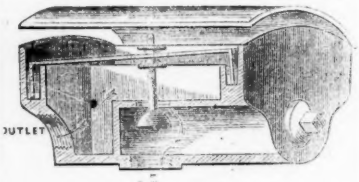
Note.—The per centage of error indicates only the condition of the meters as sent from the works of the maker to the inspector's office for verification and stamping in accordance with the Act. The public purchasing meters, of whatever make, providing they bear the Government stamp, have a guarantee that such meters will not register more than 2 per cent. in favour of the seller, or 3 per cent. in favour of the consumer of gas, the extreme difference sanctioned by the Act.

Without detracting from the qualities of any other meter whatever, Joseph Boulton wishes to state the fact, that Mr. Daniel Horton, of Liverpool, and Mr. James Urquhart, of Manchester, Official Gas-Meter Testers for those cities, distinctly affirm, that a better meter than his, in every respect, is not made by any one in the trade. Joseph Boulton confidently says, that he uses only the best materials of the various kinds in their construction, and pays more for labour in the manufacturing of dry meters than any other maker, so as to secure the most skilled workmen.

September, 1865.

ESPLIN'S

PATENT GAS-REGULATOR.



Manufactured by

THOMAS LAMBERT AND SON,

Gas Engineers and Founders,

SHORT STREET, LAMBETH, LONDON.

The object of this Gas-Regulator is to enable any gas consumer to reduce the pressure of the gas, as delivered to him from the works, to the most economical burning-point.

Its advantages over any other regulator are as follows:—

It is more simple in its construction. More sensitive in its operation. Less liable to get out of repair. It requires no more attention than a gas-meter. And is the cheapest regulator yet made.

JOSEPH BOULTON,

PATENT DRY AND IMPROVED WET GAS-METER MANUFACTURER

80, KING'S CROSS ROAD, AND

10½, GREAT PERCY STREET, CLERKENWELL.

The superiority of these Meters over all others hitherto invented has gained for them unparalleled patronage by all the principal Gas Companies and the Trade in general, on account of their unerring registration, efficient workmanship, and the quality of the materials used in their construction.

STATION-METERS, GOVERNORS, PRESSURE-GAUGES, & EXPERIMENTAL METERS,

ON THE MOST IMPROVED PRINCIPLE.

Old Meters thoroughly repaired, and altered to meet the requirements of the Act of Parliament.

ALL METERS WARRANTED.

TUBE-MILLS AND GAS-FITTING MANUFACTORY,

WALSALL, STAFFORDSHIRE.

LAMBERT BROTHERS

Desire to inform Managers of Gas-Works, Local Boards, and large Consumers of Gas, that the patent

BAT'S-WING Economizer Gas-Burner for Street-Lamps

is now ready for delivery. Also various larger sizes. The Factory Bat's-wing, burning at 18/10ths pressure, shows a steady sheet of flame *eight inches wide* by *three and a half inches deep*. Schedules of consumption for all sizes, proved under various pressures from half-inch to 3-inch (both Union, Jet, and Bat's-wing), on application to

LAMBERT BROTHERS,

OLD TUBE AND FITTING WORKS, WALSALL.

LIVESEY FIRE-CLAY WORKS,

NEAR BLACKBURN, LANCASHIRE.

ORLANDO BROTHERS,

MANUFACTURER OF PATENT CLAY RETORTS,

AND EVERY DESCRIPTION OF

TUBULAR GLAZED SEWERAGE PIPES, BENDS, JUNCTIONS, ETC.

FIRE-BRICKS, TILES, BLOCKS, AND CHIMNEY-TOPS.

TO GAS-FITTERS.

WANTED immediately, by the Bromley Gas Consumers Company, a thoroughly experienced, practical WORKMAN as a gas-fitter, and who also understands and can lay mains and services, and fix meters.

The situation will be permanent to a suitable man, and liberal wages will be given.

A cottage belonging to the Company, adjoining their Works, can be had if required.

Apply, giving references to present and former situations, to the Secretary and Manager, Gas-Works, Bromley, KENT, S.E.

GAS-FITTERS.

THE Birmingham Old Gas Company requires several additional GAS-FITTERS.

Liberal wages, with constant employment, will be given to respectable men who thoroughly understand their trade.

Apply to the SECRETARY, Gas Offices, Union Street, BIRMINGHAM.

WANTED immediately, a Stoker for a Gas-Work in a country town, where the annual make is from 10 to 12 million feet. He must be a steady and industrious man, and competent to manage a steam-engine and exhauster, and must be able to write a good hand.

Wages 18s. per week, with house, coal, and gas free.

This will be a permanent situation to a suitable man.

Apply, stating age, with references or testimonials, to Mr. KING, 11, Bolt Court, FLEET STREET, E.C.

TO GAS COMPANIES.

WANTED, by the Advertiser, a situation as INSPECTOR, or otherwise. Practically understands the distribution of gas, the laying of mains and services, gas-meters both wet and dry, and the repairs of the same, consumers fittings, and all the duties connected with a gas-work; having filled a similar situation for the last nine years in a metropolitan gas company. First-class references.

Direct to HENRY SHAW, care of Mr. Roberts, 10, New Court, Farringdon Street, LONDON, E.C.

GEORGE CUTLER, jun., Engineer, Gasholder and Boiler Maker, and Contractor for cast-iron Tanks, Roofs, Purifiers, Condensers, alteration and erection of Gas-Works in all its branches.

London Gasholder and Boiler Works, 8, Wharf, Wenlock Road, City Road, LONDON.

WANTED, second-hand Purifiers. Any person having two 5 ft. square purifiers to dispose of second-hand, at a reasonable price, may hear of a customer on application to Mr. J. STRACHAN, Gas Engineer, READING.

FOR SALE, cheap, second-hand, an 8-in. HYDRAULIC VALVE, to work 4 purifiers; and 1 PURIFIER, 7 ft. 6 in. by 4 ft. inside; also 2 PURIFIERS 4 ft. by 2 ft., and 2 ft. deep, with partition.

Can be seen, and particulars of price obtained, at GEORGE CUTLER, jun.'s, Engineer, 8, Wharf, Wenlock Road, City Road, LONDON.

TO GAS COMPANIES AND CONTRACTORS.

TO BE SOLD cheap, the undermen- tioned GAS APPARATUS, the property of the Rossendale Union Gas Company:—

Hydraulic Main, D-shaped, 16½ by 14 in., for 18 retorts.

18 5-in. H-Pipes.

18 5-in. Ascension Pipes.

18 Retort Mouthpieces and Lids, 14½ by 12 in.

Cast-iron Coke Scrubber, 10 ft. high, 4 ft. by 5 ft.

3 8-in. Slide-Valves.

A 9-in. vertical Condenser, 16 pipes, 9 ft. high.

4 Dry Lime Purifiers, 8-in. connexions, 8 ft. 2 in. long, 3 ft. wide; 5 tiers of sieves.

Centre Valve and Lifting Gear.

Gasholder, 40 ft. diameter, 12 ft. deep, with pillars, stays, balance-weights, and chains.

The whole in excellent condition, and capable of supplying gas to 2500 or 3000 lights.

Also on sale, the GAS APPARATUS of a small Work, including hydraulic main, stand and H pipes, condenser, washer, purifiers, and gasholder, with connexions, adapted for supplying 1500 to 2000 lights.

For prices and further particulars, apply to Mr. THOMAS NEWBIGGING, Manager, Rossendale Union Gas Company, BACUP.

TENDERS FOR GASHOLDER.

THE YORK UNITED GASLIGHT COMPANY.

TO GASHOLDER MAKERS, IRON-FOUNDERS, &c.

PARTIES desirous of Tendering for the construction and erection of a Telescopic GASHOLDER, 101 ft. 6 in. diameter and 50 ft. high, in two lifts, with columns, guides, girders, chains, weights, &c., complete, may see the plans and specification at the Company's Office, Monk Bridge, York, on and after the 30th day of October inst., from ten to four o'clock, up to the time of letting.

Tenders will be received at the Company's Office, before ten o'clock, on Thursday, the 23rd day of November next.

Security will be required for the due performance of the contract.

No pledge is given that the lowest or any tender will be accepted. JOSEPH BRADDOCK, Clerk.

York, Oct. 12, 1865.

EQUITABLE GASLIGHT COMPANY.

NOTICE is hereby given that a HALF-YEARLY ORDINARY GENERAL MEETING of the SHAREHOLDERS of the above Company will be held at this Office on Tuesday, the 7th day of November next, to receive the Reports of the Directors and Auditors, and to declare a DIVIDEND upon the Capital of the Company for the half year ended the 30th of June last.

The Chair will be taken at One o'clock precisely.

Notice is hereby also given that the Transfer Books of the Company will be closed on Wednesday, the 25th inst., and re-opened after the meeting.

By order of the Board of Directors,
SAMUEL ANDREWS, Secretary.

Office, No. 21, John Street, Adelphi, Oct. 12, 1865.

TO GAS ENGINEERS, CONTRACTORS, AND OTHERS.

THE St. Decuman's Gas and Coke Company, Limited, are prepared to receive Plans and Specifications of the necessary Works, and Tenders for the erection of the same, for Lighting the towns of Watchet and Williton, in the county of Somerset, containing about 3000 inhabitants.

Watchet is the terminus of the West Somerset Railway, and distant from Taunton 17 miles.

Further particulars can be obtained on application, either personally or by letter, to the Secretary, to whom the plans, specifications, and tenders are to be delivered or sent on or before the 3rd day of November next.

The Directors do not pledge themselves to accept the lowest or any other tender, or to adopt either of the plans, which will be returned to the parties.

W. L. COPP, Secretary.

Watchet, Somerset, Oct. 3, 1865.

THE BOLTON GAS COMPANY.

TO GASHOLDER MAKERS.

THE Directors of the Bolton Gas Company are desirous of receiving TENDERS for a Telescopic GASHOLDER, 140 ft. diameter, with suitable suspension-frame.

Specifications may be had on application to the undersigned.

Tenders to be delivered at the Company's Offices, Gas Street, Bolton, before noon of Monday, the 13th of November; but the Directors do not bind themselves to accept the lowest or any tender.

HARRISON VEEVERS, Manager.

Gas-Works, Bolton, Oct. 17, 1865.

TO GASHOLDER MAKERS, IRON-FOUNDERS, &c.

THE Directors of the Warrington Gaslight and Coke Company are prepared to receive TENDERS for the construction and erection of a Telescopic GASHOLDER, 60 ft. diameter and 20 ft. high, with suspension-columns, girders, &c., complete, formity with plans and specifications to be seen at the Offices of the Company.

Sealed tenders (addressed to Benjamin Pierpoint, Esq., Chairman of the Directors, St. Austin's, Warrington) must be sent in on or before Thursday, the 16th of November next.

The Directors do not bind themselves to accept the lowest or any tender. By order,

JAMES PATERSON, Manager.

Gas Company's Office, Warrington,
Oct. 23, 1865.

TO GAS ENGINEERS OR MANAGERS OF GAS-WORKS, &c.

THE Directors of the Milborne Port Gas Company, Limited, are prepared to receive TENDERS from such persons as are disposed to contract for supplying GAS at per 1000 feet, and to keep the Works and Plant in repair for a period of (say) five years.

For further particulars apply to the Secretary, at the Company's Offices, Milborne Port, Somerset.

Tenders to be sent in, under cover, to the Secretary, on or before Saturday, the 4th of November, 1865.

JOSEPH HYDE, Secretary.

Dated Oct. 24, 1865.

THE Directors of the Croydon Commercial Gas and Coke Company are desirous of receiving TENDERS for the construction of a BRICK TANK, 104 ft. in diameter, on their premises at Waddon, Croydon, drawings and specification of which can be seen at the Company's Offices, Surrey Street, Croydon, between the hours of eleven and four o'clock.

Tenders to be forwarded, under cover, to the Secretary, endorsed "Tender for Tank," before Tuesday, the 21st of November next.

The Directors do not bind themselves to accept the lowest or any tender. By order of the Board,

WILLIAM PURVIS, Secretary.

Croydon, Oct. 27, 1865.

GAS TAR.

THE Directors of the Wolverhampton Gas Company invite TENDERS for the purchase of their TAR for the term of three years from the 1st of January next, delivered into the contractor's boats, at their Horseley Fields and Stafford Road Works. The price stated to be per ton of 210 gallons.

Payments cash, monthly.

Tenders, addressed to the CHAIRMAN, must be sent on or before the 23rd of November next.

Wolverhampton, Oct. 26, 1865.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire-Bricks, and every description of Fire-Clay Goods.

S. CARPENTER, 3, Crampton Place, Bow Common, LONDON, E., Leather Seller and Glove Maker. Stokers Gloves and Finger-Gloves, and all kinds of Chamois Leather for cleaning lamps.

CHARLES PANTING,
CONSULTING PRACTICAL ENGINEER,
8, NEW BROAD STREET, LONDON, E.C.

Mr. Panting having had many years experience in designing and manufacturing gas apparatus, is prepared to advise with Companies and others on the laying out of new, and on the extension or improvement of existing gas-works.

Plans, specifications, and estimates furnished.

D. GRANT & CO.,
GAS-METER MANUFACTURERS
(Stamped according to the Sale of Gas Act).
STATION-METERS ANY SIZE.
PHOTOMETERS, EXPERIMENTAL METERS,
PRESSURE-GAUGES, &c.
Price List on application.
GAS-METER WORKS, CROSSCAUSWAY, EDINBURGH.

J. STRACHAN,
CONSULTING GAS ENGINEER,
68, KING'S ROAD, READING,

Having had many years experience in the adjustment and regulation of the supply of gas to public lamps, begs to offer his services to Gas Companies, Corporations, or Boards of Health, on reasonable terms.

Contracts taken for laying mains, general repairs, and extension of gas-works.

BEST AND HOBSON,
LATE
ROBERT BEST,
100, CHARLOTTE STREET, BIRMINGHAM,
Manufacturers of
CHANDELIERS, PENDANTS, BRACKETS,
Brass and Iron Gas-Fittings, Steam and Water-Cocks, &c., &c.

Also,
IPATENT WELDED IRON TUBES,
For Gas, Steam, Water, and other purposes.
GAS APPARATUS OF EVERY DESCRIPTION.
High-pressure Water-Valves and Cocks, &c., &c.
Plumbers Brassfoundry.
BRASS, COPPER, COMPOSITION, AND LEAD TUBES.
Works: Birmingham, and Great Bridge, Staffordshire.

WALTER MABON & CO.,
Engineers,
ARDWICK IRON-WORKS,
FAIRFIELD STREET, MANCHESTER,
MANUFACTURERS OF
IRON TANKS, GASHOLDERS,
GAS APPARATUS,
PIPES, VALVES, IRON ROOFS,
WROUGHT AND CAST-IRON GIRDERS.
DESIGNS, SPECIFICATIONS, & ESTIMATES FURNISHED.

TO INVENTORS AND PATENTEES.

MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for SIX MONTHS; or LETTERS PATENT, which are granted for Fourteen Years.

Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.

Patents procured for Foreign Countries.

Information as to cost, &c., supplied gratuitously upon application to the advertiser, 41, Parliament Street, WESTMINSTER. [Office of the JOURNAL OF GAS LIGHTING, &c.]

ESTABLISHED 1837.

JOHN BEVERLEY and SON,
MARK LANE, LEEDS.

Manufacturers of Patent Metallic Wet Gas-Meters, Station-Meters, Experiment-Meters, Governors, Pressure-Gauges, Syphon-Pumps, &c.

Inventors and sole manufacturers of Beverley's double-cased Gas Cooking Apparatus, unequalled in economy, comfort, and cleanliness.

Meters of any maker altered and put into complete repair, to meet the requirements of the Sale of Gas Act.

ROBERT MACLAREN and CO.,
EGLINTON FOUNDRY, GLASGOW,
Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent. General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

WEALE'S SERIES.—Catalogue on application.

A TREATISE ON GAS-WORKS, and the Practice of Manufacturing and Distributing Coal Gas. By SAMUEL HUGHES, C.E.
Second edition, illustrated, revised by WILLIAM RICHARDS, C.E., price 3s.
VIRTUE BROTHERS and Co., Amen Corner, LONDON.

EIGHTH THOUSAND.

AGRICULTURAL VALUE OF REFUSE GAS LIME.

By PROFESSOR VOELCKER,
Professor of Chemistry to the Royal Agricultural Society of England.
Price 10s. per 100, or by post, 10s. 6d.
London: WILLIAM B. KING, 11, Bolt Court, FLEET STREET, E.C.

NOW READY,

VOL. XIII. of the JOURNAL of GAS LIGHTING, WATER SUPPLY, and SANITARY IMPROVEMENT, for 1864, price 21s., bound in cloth and lettered. A few copies of Vols. II., III., IV., V., VI., VII., VIII., IX., X., XI., and XII. are still on sale.
W. B. KING, 11, Bolt Court, FLEET STREET, E.C.

GAS LEGISLATION, 1865.

Now ready,
Reports of the Proceedings before Select Committees of the House of Commons.
BATH GAS BILL—price 1s., by post 1s. 1d.
KENT GAS BILL—price 1s. 6d., by post 1s. 7d.
PRESTON, EXETER, AND FOLKESTONE GAS BILL—price 1s., by post 1s. 1d.
STROUD GAS (Local Government Supplemental, No. 3) Bill—price 1s., by post 1s. 1d.

Also, price 2s., by post 2s. 1d.,
Reports of the Proceedings before Select Committees of the House of Lords on the
LEAMINGTON, LIVERPOOL, & RAMSBOTTOM GAS BILLS.
HANLEY GAS BILL.
UNITED GENERAL (DUBLIN) GAS BILL.

London: WILLIAM B. KING, 11, Bolt Court, FLEET STREET, E.C.

CAST-IRON Retorts, Socket Pipes, with Syphons and all requisite Connexions, Lamp Columns, Wrought Iron Tubing, Valves, Street Lamps, Sight Holes, Furnace Doors, Ash Pans, Charging and Coke Shovels, Iron Pails and Coke Barrows, Cross Bars, Fire Pots, Pumps, Iron Borings.
PURIFIERS, CONDENSERS, and SCRUBBERS erected complete, or the materials supplied; with every description of goods in use by Gas-Works, in stock, on wholesale prices, at
Mr. LYNCH WHITE'S,
Old Barge Iron Wharf, Upper Ground Street,
LONDON.

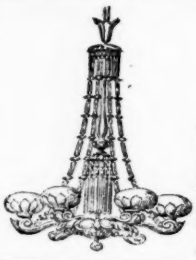
AUCHINHEATH, Lesmahago, Gas COAL, known in the market for the last fifty years as a first-class gas coal.
JAMES FERGUSON and CO.,
Sole Lessees of the Auchinheath Coal-Field, are prepared to ship the above at Glasgow, Greenock, and Ardrossan, on the west coast of Scotland; and at Granton or Leith, in the Firth of Forth, on the east coast. Also to forward them to any railway-station in Scotland or England.
Price and other particulars may be learned by addressing
JAMES FERGUSON and CO.,
GAS COAL WORKS,
LESMAHAGO.

SAMUEL CUTLER, Gasholder MAKER and CONTRACTOR
For Tanks, Roofs, Purifiers, Condensers, Erection and Alteration of Works and every description of GAS APPARATUS.
PROVIDENCE IRON WORKS,
MILL WALL, POPLAR, LONDON, E.
Main Laying and Gas-Works erected complete.

OXIDE OF IRON.
We are prepared to supply, on moderate terms,
HYDRATED PEROXIDE OF IRON (BOG OCHRE),
Same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.
FRANCIS RITCHIE & SONS,
BELFAST.

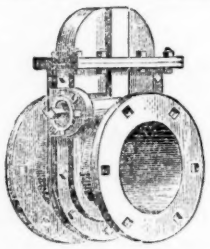
HONOURABLE MENTION. INTERNATIONAL EXHIBITION, 1862.

CARTWRIGHT & CO.,
MANUFACTURERS OF
GASFITTINGS, BRACKETS, GASELIERS,
&c., &c.
PATENTEES OF THE ANHYDROUS SLIDE, whereby the use of Water and Heavy Weights are dispensed with.
39, 40, 41, & 42, LOMBARD STREET,
BIRMINGHAM.



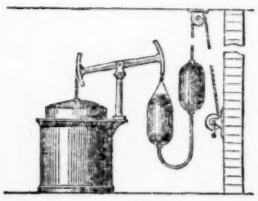
F. & C. OSLER,
45, OXFORD STREET, LONDON;
Manufactory—Broad Street, Birmingham—Established 1807,
MANUFACTURERS OF GLASS CHANDELIERS, GLASS LUSTRES, TABLE GLASS, &c. &c.
ELEGANT CRYSTAL GLASS CHANDELIERS, for GAS, from £4 upwards
Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable or DRAWING-ROOMS and BALL-ROOMS. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.
THEATRES, CONCERT, ASSEMBLY, AND BALL ROOMS LIGHTED BY ESTIMATE ON THE LOWEST TERMS.

WALTER FORD,
159, GRAY'S INN ROAD, LONDON.
MANUFACTURER OF WET AND DRY GAS-METERS, STATION-METERS, GOVERNORS, &c. &c.
Sole Manufacturer of **PADDON'S PATENT STREET-LAMP REGULATORS,** for insuring any required consumption. These Regulators are in general and increasing use, and references can be given to Gas Companies who use them for every Lamp.



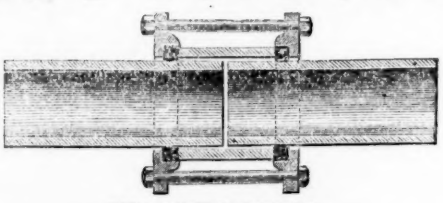
REDUCED PRICES OF
BRYAN DONKIN & CO.'S
IMPROVED GAS VALVES
WITH WROUGHT-IRON PINIONS
from 2 inches to 18 inches, price 9s. 6d. to 12s. per inch diameter
List of prices, with full dimensions of all sizes up to 36 inches, to be had on application.
These Valves are all proved on both sides to 30 lbs. on the square inch before leaving the works, and are always kept in stock.
Valves made with Outside Racks to order. Also, Screw Water-Valves with Gun-Metal Faces.
BRYAN DONKIN & CO.,
ENGINEERS,
NEAR GRANGE ROAD, BERMONDSEY.

MARTIN'S
LEE MOOR PORCELAIN FIRE-BRICKS,
Containing no Lime, and only ·45 of Oxides, resist the strongest heats, and will last for Gas-Works longer than any others.
Samples and prices sent, and the highest references given, on application to
MARTIN BROTHERS,
ST. AUSTELL, CORNWALL.



By Her Majesty's Royal Letters Patent.
KEELING'S
STATION GOVERNOR REGULATOR.
N.B.—The largest Governor in the World is now being supplied (viz., 36 in. inlet) to one of the London Gas Companies. All orders to be addressed to
Mr. J. KEELING, Consulting Gas Engineer,
12, BERMONDSEY NEW ROAD, LONDON, S.E.

DR. NORMANDY'S
PATENT PIPE-JOINTS.



SOLE MANUFACTURERS—
A. NORMANDY and CO., Engineers and Ironfounders,
HOLLY BUSH PLACE, BETHNAL GREEN ROAD, LONDON, N.E.
Also Sole Manufacturers of the Patent Marine Aërated Fresh-Water Apparatus, Steam Pumps Steam Winches, &c.
These Joints have been in use nearly three years on gas-mains, and are still perfectly sound. They have also been proved quite sound under a pressure of 680 feet head of water.
The advantages which these Joints offer are economy, perfect soundness and durability, ease and rapidity of application, use of perfectly plain pipes, so that a tight Joint may be made with cut pipes, even though the ends do not come close together. Any ordinary labourer is capable of securely fixing them.
These Joints are particularly applicable to gas, water, and suction pipes, and remain permanently sound; they are cheaper than the socket-joint, as they save the lead, the gasket, the iron forming the socket (which in a 3-inch main amounts to 10 lbs.), and the fire for melting the lead. There is also considerable saving of time, more than four Joints being made in the time required for making only one of the others, and by unscrewing the bolts, a pipe can be removed and replaced with the greatest facility.
By means of these Joints, which are made of all sizes, pipes made of either wrought or cast iron, copper, lead, tin, earthenware, glass, bitumen, gutta-percha, suction-hose, &c., may be rapidly and soundly united, and taken apart with facility.

GAS & GENERAL ENGINEERING OFFICES,
53 FREDERICK STREET, EDINBURGH.

MR. JOHN ROMANS, Civil and Practical Engineer, may be consulted at the above address on all matters pertaining to Gas-Works, Water-Works, and other Engineering questions.

Plans and Specifications Furnished, Works Erected and Repaired, or taken on Lease for a term of years.

Mr. Romans is also agent in Edinburgh for supplying High-Classed Scottish Cannel Coal and Fire-Clay Goods.

GREAT FIRE
in Tredegar, Monmouthshire.
Another Proof of the Security of
C. H. GRIFFITH'S FIRE & THIEF PROOF SAFES.

[COPY OF LETTER.]

"Mr. Griffiths, *Tredegar, April* 7, 1865.

"Sir,—I have much pleasure in stating that the 'Fire-Proof Safe' you made me about three years since, has been the means of preserving the whole of my books, valuable documents, &c., from the disastrous fire which consumed my premises on the 24th of last month. Although exposed for hours to the most intense heat, the Safe opened without much difficulty.

"Have the goodness to forward me another as soon as possible, and oblige

"Yours very respectfully,

"To Mr. C. H. Griffiths, "E. HORLICK.
"Fire-Proof Safe Manufacturer,
"23, Cannon Street West.

"P.S.—You have my sanction to use this in any way you think proper, not only for your benefit, but that of the public."

INTERNATIONAL EXHIBITION,
1862. CLASS X.
PRIZE MEDAL
For excellence of Fire-Clay Gas Retorts, and
"HONOURABLE MENTION" for
good quality of Fire-Bricks.

WILLIAM STEPHENSON & SONS,
THROCKLEY,
NEWCASTLE-ON-TYNE,
MANUFACTURERS OF EVERY DESCRIPTION OF
FIRE-BRICKS, CLAY RETORT
&c. &c.
RETORT MOUTHPIECES, BOLTS, NUTS, &c.

STOURBRIDGE FIRE-CLAY WORKS.

E. BAKER & CO.,
24 WHARF, HARROW ROAD, PADDINGTON, W.

FIRE-BRICKS, LUMPS, SQUARES, and TILES of all dimensions.
GAS-RETORTS always in stock.
GARDEN EDGINGS of various patterns.
ORNAMENTAL BUILDING BRICKS.
GRATE BACKS in various designs.
Contracts entered into to set Retorts, erect Furnaces, &c.
Shipments on the shortest notice.

THOMAS CARR & SON,
MANUFACTURERS OF
FIRE-BRICKS, LUMPS, TILES, RETORTS,
&c. &c.
SCOTSWOOD FIRE-BRICK WORKS,
NEAR
BLAYDON-ON-TYNE.

HARRIS and PEARSON,
PROPRIETORS OF
BEST CLASS-HOUSE POT AND CRUCIBLE CLAY
MANUFACTURERS OF
FIRE BRICKS, GAS RETORTS, &C.
AMBLECOTE FIRE CLAY AND BRICK WORKS,
STOURBRIDGE.
Late in the occupation of I. and W. King. Originally J. Pidcock, Esq.

NB A quantity of best Clay Retorts in stock, viz.—Circulars, 14 inches, 15 inches. 16 inches.
D's, 16×12, 15×14, 20×16, 16×18.

HANCOCK'S INDIA-RUBBER GAS-TUBING.

All sizes, from ¼ in. to 4 in. diameter and upwards.
Also,
INDIA-RUBBER BAGS for GAS-MAINS.
WASHERS for GAS and STEAM JOINTS.
VALVES (pure solid Rubber) for STEAM-ENGINES.
PACKING (Roll or Sheet) for STEAM-ENGINES.
STRAPS (Rubber and Canvas) for DRIVING MACHINERY.
HOSE-PIPES to convey HOT or COLD WATER.
COKE-HOSE, made specially for rough usage.
GAUGE GLASS RINGS and WASHERS.
SUCTION and DELIVERY HOSE-PIPES for PUMPS, FIRE-ENGINES, BREWERIES, and FACTORY purposes.
BRASS JETS, STOP-COCKS, SPREADERS, and UNION CONNECTING-JOINTS fitted to ditto.
Illustrated Price-Lists on application.

JAMES LYNE HANCOCK,
Vulcanized India-Rubber Works,
GOSWELL MEWS, AND 265, GOSWELL ROAD
LONDON, E.C.

Trade Mark. **THE MEDAL FOR 1862.**

THE ONLY PRIZE MEDAL AWARDED FOR TUBES AND FITTINGS.

CROWN TUBE-WORKS,
WEDNESBURY, STAFFORDSHIRE.
WAREHOUSE—81, UPPER GROUND ST., LONDON.
JAMES RUSSELL & SONS,
Patentees and First Makers of Wrought-Iron Tubes.

W. J. HOLLANDS,
IRON MERCHANT,
31, BANKSIDE, LONDON, S.E.

SOCKET, FLANGE, HOT-WATER PIPES, AND ALL CONNEXIONS; RETORTS, HYDRAULIC MAIN, LAMP-COLUMNS, &c.; AND EVERY DESCRIPTION OF CASTINGS AND WROUGHT-IRON-WORK FOR GAS AND WATER-WORKS, STEAM, AND GENERAL PURPOSES.

N.B.—All goods kept in stock, and supplied at wholesale prices. Estimates given, and orders by post punctually attended to the same day.

BIRTLEY IRON WORKS,
CHESTER-LE-STREET,
DURHAM.

Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.

Warehouse in London for Cast-iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

ALFRED PENNY, Gas and
CONSULTING ENGINEER,
WENLOCK IRON WORKS,
21 & 22, WHARF ROAD, CITY ROAD, LONDON.

Mr. PENNY having had a large experience in the construction, alteration, and management of Gas-Works, begs to inform the Directors of Gas Companies that he may be consulted on all matters appertaining thereto. He also manufactures Gasholders, Purifiers, and all the various apparatus used in Gas-Works, and keeps in stock Retorts and Mouthpieces, Socket-Pipes, Bends, Branches, T-pieces, &c. &c.

Plans, Specifications, and Estimates prepared.

BELGIAN CLAY RETORTS.

J. SUGG and CO., late ALBERT KELLER, Ghent.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.

Communications, addressed to J. SUGG and Co., GHENT, will receive immediate attention.

GLOBE METER-WORKS, OLDHAM.

NEWTON & BRADDOCK,
Manufacturers of
IMPROVED CONSUMERS GAS-METERS,
STATION-METERS, GOVERNORS, GAUGES, &c.
Sole Manufacturers of their
PATENT COMPENSATING GAS-METER,
This Patent being applicable for the repair of old Meters.
STATION-METERS,
of any size, on the best principle.

CATHELS'S Patent Four-Way Disc GAS-VALVES, applied to Purifiers, Gasholders, or other apparatus, save from ONE-HALF to TWO-THIRDS the number of ordinary Valves and Connexions. They are simple, strong, and durable; and having no ground faces or rubbing surfaces, cannot get set fast however long they may remain unmoved. The direction in which the Gas is passing can also be seen at a glance.

Illustrated Circulars, Prices, &c., furnished on application to Mr. E. S. CATHELS, Gas-Works, SHREWSBURY.

TO GAS ENGINEERS AND OTHERS
CONNECTED WITH GAS COMPANIES WORKS.

WOOD SIEVES for Gas Purifiers.

BENJAMIN CARPENTER begs to inform the above that he has been supplying most of the principal Gas Companies Works in London, &c., with WOOD PURIFYING SIEVES for the last four years; and, he feels sure, he has given every satisfaction, by the continued favour he has received from gentlemen knowing the benefit derived by their use.

Having, through the introduction of improved machinery, effected a great saving in their manufacture, he is now enabled to offer them at a very Low Price. Being perfectly satisfied of their Superiority over all other descriptions, on account of their Strength, Cheapness, Durability, Non-Liability of Corrosion, and Facility of Cleaning, and having devoted four years to the Perfection of this article, he feels that nothing has been lost sight of in their manufacture which would tend towards Durability and Efficacy.

The Trade supplied, and Orders executed on the shortest notice.

Estimates forwarded on application to

BENJAMIN CARPENTER,
Wood Sieve Maker for Gas Purifiers,
14, JOHN STREET, RODNEY STREET,
PENTONVILLE ROAD, LONDON, N.

FREDERICK RICHARDS,
CONSULTING AND GENERAL ENGINEER,
WILMSLOW, CHESHIRE.

Plans, Specifications, and Estimates made for New or the Alteration of existing Gas-Works.

Gas-Works leased, or Estimates given for the Manufacture of Gas per Contract for a term of years.

Manchester Office: 8, Cateaton Street.

GAS COAL.

MESSRS. RICHARD EVANS & CO., Haydock Collieries, near St. Helen's, are prepared to SUPPLY their best GAS COAL to Gas Companies on favourable terms.

This Coal is extensively used by some of the largest Gas Companies in the Kingdom.

It produces 9,400 cubic feet of 17-candle power, and yields 13 cwt. of coke per ton.

JAMES NEWTON & SONS,
(Established 1820,)
FIRE-BRICK AND TILE MERCHANTS,
Wholesale and for Exportation,
FALCON DOCK, 78 AND 79, BANKSIDE,
SOUTHWARK, LONDON, S.E.,
DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and FIRE-CLAY, and every Article suitable for
GAS AND WATER WORKS.

J. T. B. PORTER & CO.,
GAS ENGINEERS,
MANUFACTURERS AND CONTRACTORS FOR GAS-WORKS
Of any extent at Home and Abroad,
GOWTS BRIDGE WORKS, LINCOLN,
AND
JOHN STREET, ADELPHI, LONDON, W.C.

JAMES MILNE & SON,
AS ENGINEERS, GAS-METER, GAS APPARATUS, AND GASFITTINGS MANUFACTURERS,
EDINBURGH,
& 2, KING EDWARD STREET, NEWGATE STREET, LONDON.

Station-Meters, Governors, Consumers Meters, Gas Lustres, Chandeliers, Brackets, &c., and every description of Gasfittings and Gas Apparatus.

JAMES OAKES and CO.,
ALFRETON IRON WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,

Beg to inform Gas and Water Companies and the public that they keep in stock in London all the CASTINGS in general use in Gas and Water-Works, including Iron Retorts, Socke and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.

N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.

CHARLES HORSLEY, Agent.

FRASER'S PATENT RIBBED CAST-IRON RETORTS are being introduced at the Gas-Works, Derby, Shrewsbury, Portsea, Nottingham, Syston, Whitwick, Barrow-in-Furness, Seaham, Risborough, Leighton, Loughborough, Corwen, Castle Donnington, Kegworth, Royston, Woking, Swadlincote, Rugby, Carlow in Ireland, Stornoway, N.B.; also at Gibraltar and Montreal, &c.

Apply to Mr. A. C. FRASER, Gas-Works, LOUGHBOROUGH.

ECONOMY IN GAS MAKING.

GREATER BRILLIANCY OF LIGHT,
LESS SMOKE,
AND
NO NAPHTHALINE,
by using
WARNER'S PATENT ANHYDROUS OXIDE OF IRON,

Which, in addition to purifying Gas from all the Sulphuretted Hydrogen and Carbonic Acid, decomposes at the same time the whole of the
AMMONIA,
and a portion of the Bi-sulphide of Carbon.

This is the only material yet discovered which will decompose all the "Ammonia" contained in crude or unwashed Gas.

The Hydrogen liberated through the decomposition of the Ammonia unites with the excess of carbon, and gives an increased yield of Gas of from 10 to 15 per cent., of greater brilliancy of light and with less smoke.

The Oxide can be renovated by simple exposure to the air.

LONDON OFFICES, 17, LAURENCE POUNTNEY LANE.

WARNER'S SILICATE OF IRON PAINT.

This Paint, which is suitable for every description of work, is not affected by Sea Water, or by the Strongest Acids, and, being incorrodible, is much superior to the Oxides of Iron at present in use, they being, in fact, rusts themselves.

LONDON OFFICES, 17, LAURENCE POUNTNEY LANE, E.C.

HIGH-PRESSURE GAS-METERS.

MESSRS. WILLIAM & BENJAMIN COWAN beg respectfully to call attention to Messrs. Newbigging and Hindle's Patent

AIR-TIGHT INDEX-BOX,

Which supplies a want long felt by Gas Companies, and hitherto very inadequately provided for. The PATENT AIR-TIGHT INDEX-BOX prevents the ascent of water by the seal tube, even under the highest pressures. It is therefore of paramount utility in irregular and hilly districts, and even in level localities it is of great service, as it removes the objections to cork and other slide pendants.

As no raised Index is needed, Meters can be made of a convenient height, for fixing on shelves, under benches, or in any confined or limited space.

For a full statement of its advantages, apply to the Sole Manufacturers,

WILLIAM AND BENJAMIN COWAN,

WET & DRY GAS-METER MANUFACTURERS,

Buccleuch Street Works, Edinburgh, & 13, Strutt Street, Manchester.

Established 1827.

SOLE MANUFACTURERS OF

ESSON'S PATENT COMPENSATING GAS-METERS,

AND OF

KAY'S PATENT HYDRAULIC VALVE GAS-METERS; | **COWAN'S PATENT SIDE VALVE GAS-METERS;**

All of which may be had with Newbigging and Hindle's Patent Air-Tight Index-Boxes.

ALSO, MANUFACTURERS OF

IMPROVED DRY GAS-METERS.

All of the above being Stamped according to Act of Parliament.

GOVERNORS, STATION-METERS, PRESSURE REGISTERS & GAUGES,

MINUTE-CLOCKS, PHOTOMETERS, EXPERIMENTAL METERS,

AND OTHER DESCRIPTIONS OF GAS APPARATUS.

KING BROTHERS,

STOURBRIDGE FIRE-BRICK AND RETORT WORKS.

KING BROTHERS beg especially to call the attention of Gas Companies to the superiority of their Retorts, which are made from the celebrated STOURBRIDGE FIRE-CLAY. Mr. King has patented a Kiln for burning Retorts, by which Patent all Cold Air is excluded from the Kiln while burning, thus rendering them FREE FROM CRACKS AND CORRECT IN FORM. By great care in Manufacturing, combined with the advantages in burning, a VERY SMOOTH SURFACE is obtained, rendering them less liable to carbonize.

Retort Ovens, Fire-Bricks, Guards, Saddles, Rabbitted Bars, Flues, and Quarries, are all Manufactured of the same quality of Clay.

Every Retort and Brick is branded "King Brothers, Stourbridge."

WILLIAM INGHAM AND SONS,

WORTLEY FIRE-BRICK AND RETORT WORKS,

Near

Leeds.

W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY

beg to call especial attention to their RETORTS, which have for many seasons proved to be unsurpassed in quality by any in the Kingdom, their FREEDOM FROM CRACKS and the ADHESION OF CARBON rendering them worthy the attention of all parties interested in the making of Gas.

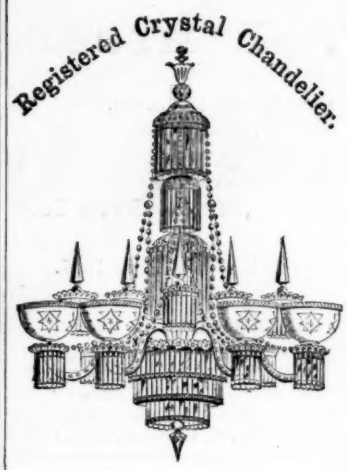
The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

A large stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all sizes kept in London at CHRISTIE & CO.—Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*



TO GAS COMPANIES AND THE TRADE.

NOTICE OF REMOVAL IN CONSEQUENCE OF THE LATE FIRE.

J. DEFRIES AND SONS,

Gas Engineers, and Manufacturers of

CRYSTAL, BRONZED, & ORMOLU Chandeliers;

IMPROVED CRYSTAL STAR & SUN LIGHTS;

VESTIBULES, and every description of Gas-Fittings.

Temporary Show-Rooms:—16 & 17, COMMERCIAL-STREET, WHITECHAPEL,

Five Minutes Walk from their late Establishment, 147, HOUNDSDITCH.

J. D. & SONS beg most respectfully to inform Gas Companies and the Trade that their CITY SHOW-ROOMS are now complete with every description of Lighting Mediums, including Registered Designs of Mediæval Gas-Fittings, Crystal, Bronzed, Ormolu, and Electro-Plated Chandeliers, Brackets, Vestibule-Lights, Bronzed and Gilt Statuettes.

Special Designs prepared in perfect accordance with architectural arrangements. Estimates furnished for the Lighting and Fitting up of Theatres, Music-Halls, and Public or Private Buildings with Gas.

GAS-MOONS of the Newest Designs.

The PATENT GAS-REGULATOR and PURIFIER reduced to **6s. 6d. per dozen.** *Pattern-Books of Gas-Fittings, Crystal and Ormolu Chandeliers for* 1864 *are now complete.*

Works: LONDON and BIRMINGHAM.

The CRYSTAL CEILING, with Ventilating Apparatus, manufactured by J. Defries and Sons for the Strand Music-Hall.

E. J. & J. PEARSON,

DELPH & TINTAM ABBEY FIRE-CLAY & BRICK-WORKS,

STOURBRIDGE,

PROPRIETORS OF

BEST GLASS-HOUSE POT & CRUCIBLE CLAY;

MANUFACTURERS OF

GLASS-HOUSE POTS, CRUCIBLES, GAS-RETORTS, & FIRE-BRICKS OF EVERY DESCRIPTION.

LLOYD AND LLOYD,

ALBION TUBE-WORKS, BIRMINGHAM,

MANUFACTURERS OF

WROUGHT-IRON TUBES & FITTINGS,

PLAIN, GALVANIZED, & ENAMELLED, for Gas, Steam, and Water, from $\frac{1}{8}$ in. to 6 in. bore.

STOCKS, TAPS, and DIES, GUN METAL GLAND-COCKS, WATER-GAUGES, &c.;

PATENT LAP-WELDED IRON TUBES,

For Locomotive and Marine Boilers, &c.

LONDON WAREHOUSE—No 66, QUEEN STREET, E.C.

GEORGE ANDERSON, Gas and Consulting Engineer,

16, ADAM STREET, ADELPHI, LONDON, W.C.

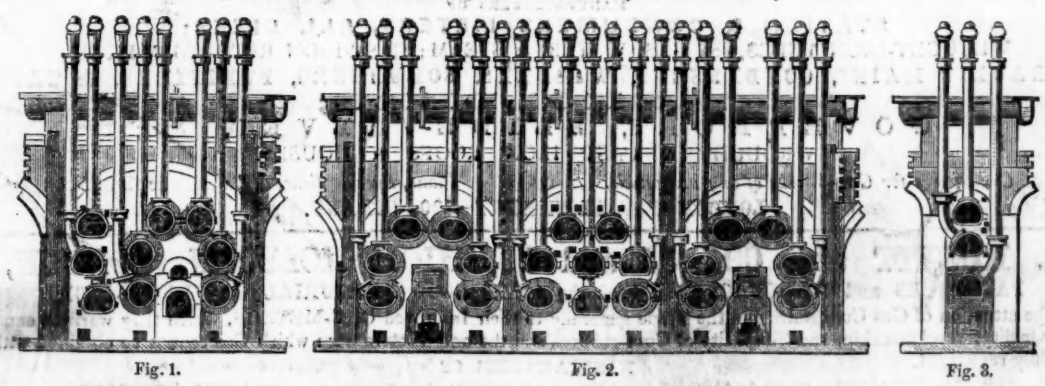


Fig. 1. Fig. 2. Fig. 3.

Fig. 1 represents an arrangement for medium sized works. Either the whole 9 or only 6 of the Retorts may be heated by the alteration of two dampers. Fig. 2. The Retorts in the centre bed are of iron, and receive the modified heat from the beds of Clay Retorts on either side.

In both figs. 1 and 2 all the furnaces, or a portion of them, may be of tar or coke. The tar furnace is adapted to burn *only* tar; and, without smoke or destruction of the Retorts, a tar furnace can be converted to a coke one, or *vice versâ*, without interfering with the Retorts.

Fig. 3 is what I adopt for small works. In it, like fig. 1, 2 or 3 Retorts can be heated by the alteration of two dampers. In each case this very often postpones for weeks, if it does not prevent altogether, the lighting up of an extra fire. These modes of setting can in most cases be adapted to existing arches.

Contracts made for the erection of the Retorts if necessary.

Also my PATENT PISTON EXHAUSTER combined with Steam Engine when required.

Also my PATENT FOUR-WAY VALVES, *one* of which answers the purpose of *three* ordinary Valves when applied to Purifiers, or bye-pass and shut-off to Station-Meters, &c., and obviates the objection of foul gas attendant on the Centre Water-Valve.

Also my CONCENTRIC GAS GOVERNOR, which occupies about half the space of the old-fashioned Governor.

THE

GAS-METER COMPANY, LIMITED,

A. ANGUS CROLL, C.E., Chairman.

GEORGE RAIT, MANAGING DIRECTOR. T. G. BARLOW, C.E., CONSULTING ENGINEER.

CROLL'S DRY GAS-METER,

(Invented and Patented in 1844, since which time 200,000 of these Meters have been manufactured by Mr. CROLL,)

Obtained **PRIZE MEDALS** at the EXHIBITIONS of London, 1851, of New York, 1853, and Paris, 1855.

IMPROVED in 1858,

And was awarded at the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for

"GOOD CONSTRUCTION and SOUND WORKMANSHIP."

Now manufactured by the GAS-METER COMPANY, LIMITED, KINGSLAND ROAD, LONDON; and, for the purpose of obtaining greater accuracy in all its parts, the most perfect machinery has been adopted, "By which the construction of the Meter is much simplified, while its liability to get out of order is diminished." (See report of T. G. BARLOW, Esq., C.E.)

ALEXANDER WRIGHT,

55 and 55A, MILLBANK STREET, WESTMINSTER, S.W.,

MANUFACTURER OF

COMPENSATING & OTHER WET & IMPROVED DRY GAS-METERS,

Of the best material and workmanship, carefully adjusted to meet the requirements of the SALES OF GAS ACT.

STATION-METERS & GOVERNORS,

WRIGHT'S REGISTERING PRESSURE-GAUGE, EXHAUSTER REGISTER, & REGULATOR;

STANDARD TEST GASHOLDERS;

Consumers' Governors; Inspectors' Pocket, King's, and all other kinds of Pressure-Gauges; Thermometers for Condensers, Pressure Registers, &c., &c.

EXPERIMENTAL TESTING APPARATUS,

Employed by the best experimenters in this country and on the continent, and by the Gas Testers in the London districts.

PHOTOMETERS, SPECIFIC GRAVITY APPARATUS, BI-SULPHURET OF CARBON TEST, THOMPSON'S BROMINE AND HEATING POWER OF FUEL TESTS, IMPROVED ALKALIMETER, EXPERIMENTAL METERS AND GOVERNORS, MINUTE CLOCKS, &c., &c.

"ANALYSIS OF GAS FOR PRACTICAL MEN,"

New and Enlarged Edition, with "Gas-Meter Testing under Sales of Gas Act," p.p. 25 Stamps.

R. LAIDLAW & SON,

GAS ENGINEERS, IRON & BRASS FOUNDERS

Alliance Foundry, 147, East Milton Street, and Barrowfield Iron-Works,

GLASGOW;

AND AT SIMON SQUARE, EDINBURGH;

MANUFACTURERS OF

STATION & CONSUMERS METERS, ALL SIZES;

WROUGHT-IRON TUBES, FOR GAS, WATER, & STEAM; CAST-IRON RETORTS & PIPES,

HYDRAULIC MAINS, CONDENSERS, WASHERS, SCRUBBERS, PURIFIERS, & TANKS.

GASHOLDERS;

GOVERNORS, SLIDE-VALVES, &c.;

WROUGHT & CAST IRON ROOFS & HOUSES.

Contractors for Gas-Works of any Magnitude. *Plans, Specifications, and Estimates furnished.*

LONDON ESTABLISHMENT—190, STRAND.

D. HULETT and CO., 55 and 56, HIGH HOLBORN, LONDON,

PATENTEES and MANUFACTURERS of the ONLY GOOD MERCURIAL GAS REGULATOR,

invite the attention of Gas Companies and the Trade generally to their Improved GAS-METERS, which they warrant equal to any in Quality, Workmanship, and Simplicity of Construction, and the only Meters from which Gas cannot be obtained without being duly registered.

MANUFACTURERS OF

GAS CHANDELIERS, GLASS LUSTRES, HALL LANTERNS, VESTIBULES, BRACKETS, PENDANTS;

DOUBLE CONE, ALBERT, SHADOWLESS, & EVERY DESCRIPTION OF BURNER, UNION JETS, BATSWINGS, ETC.;

IMPROVED FULL-WAY CARTER'S VALVES (much approved of);

GAS-STOVES, and every article connected with Gas Apparatus.

CAST & WROUGHT-IRON PIPE BLACK & GALVANIZED. COPPER, TIN, BRASS, & COMPOSITION TUBING.

D. HULETT'S IMPROVED SERVICE CLEANSER

for clearing out Mains, Services, and Interior Fittings—65s. net.

Boyle's Patent Silvered Glass Combination Reflectors and Outside Lanterns.

Sole Manufacturers of Church and Mann's Photometer.

Large Pattern Books with every description of Gas-Fittings, Chandeliers, &c., with complete Book of Prices, 12s.

London: Printed by WILLIAM BOUGHTON KING (at the Office of Clayton and Co., 17, Bouverie Street, Fleet Street); and published by him at No. 11, Bolt Court, Fleet Street, in the City of London.—Tuesday, October 31, 1865.